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p3E1.2 deletion series plasmids and excision assay results

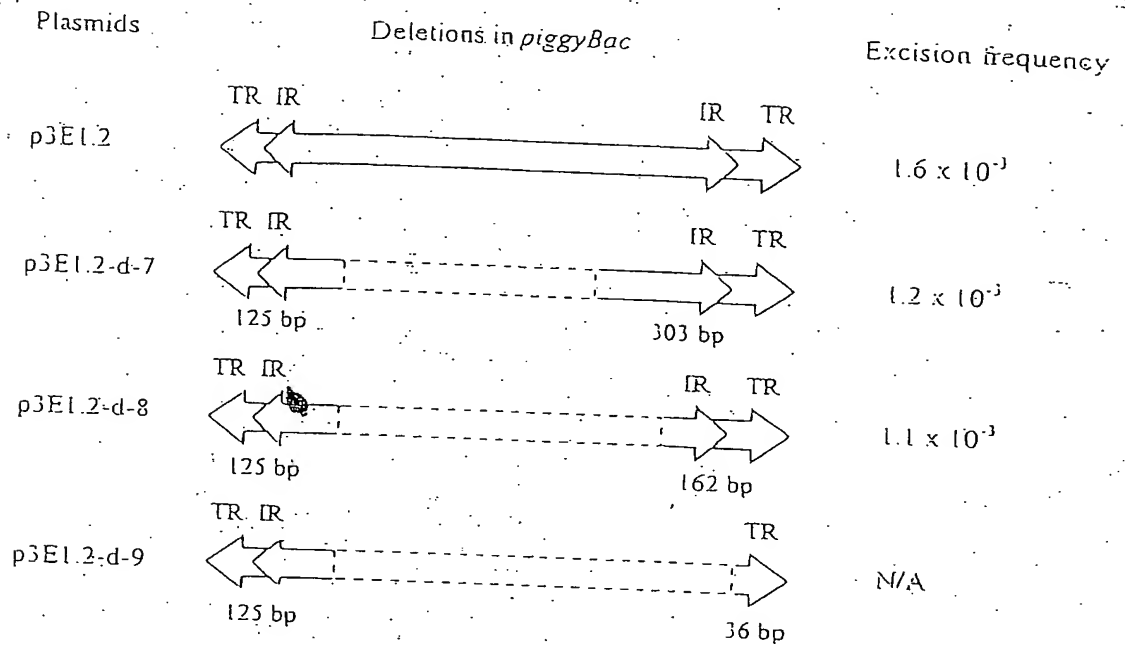


FIG. 1

FIG. 2(A)

Plasmids	Insertion Sequence	IPTA Frequency
pIAO-P/L-TTAA	TTAA	0
pIAO-P/L-TTAA2	TTAATTAA	0
pIAO-P/L	TTAATCTAGAGGATCTCTAGATTAA (XbaI/BamHI/XbaI) (SEQ ID NO: 35)	1×10^{-2}
pIAO-P/L-13 bp	TTAATCTAGACGTACGCGGAGCTTAA (SEQ ID NO: 36)	1.0×10^{-3}
pIAO-P/L-22 bp	TTAATCTAGCTAGTACTAGAACTAGATTAA (SEQ ID NO: 37)	3.6×10^{-3}
pIAO-P/L-40 bp	TTAATCTAGTTCTAGACGTACGCGGCGCACTAGTACTAGCTAGATTAA (SEQ ID NO: 38)	2.5×10^{-3}
pIAO-P/L-55 bp	TTAATCTAGTTCTAGACTGCGGCTCTAGACGTACGCGGCGCACTAGTACTAGCTAGATTAA (SEQ ID NO: 39)	1.2×10^{-2}
pIAO-P/L-73 bp	63 bp of Lambda PvuII fragment between XbaI sites of pIAO-P/L	1.3×10^{-2}
pIAO-P/L-212 bp	63 bp + 141 bp of Lambda PvuII fragment between XbaI sites of pIAO-P/L	3.1×10^{-2}
pIAO-P/L-354 bp	43 bp of Lambda PvuII fragment between XbaI sites of pIAO-P/L	2.9×10^{-2}
pIAO-P/L-589 bp	579 bp of Lambda PvuII fragment between XbaI sites of pIAO-P/L	3.2×10^{-2}
pIAO-P/L-2.2 kb	2.2 kb of Lambda HindIII fragment between XbaI sites of pIAO-P/L	3.4×10^{-2}

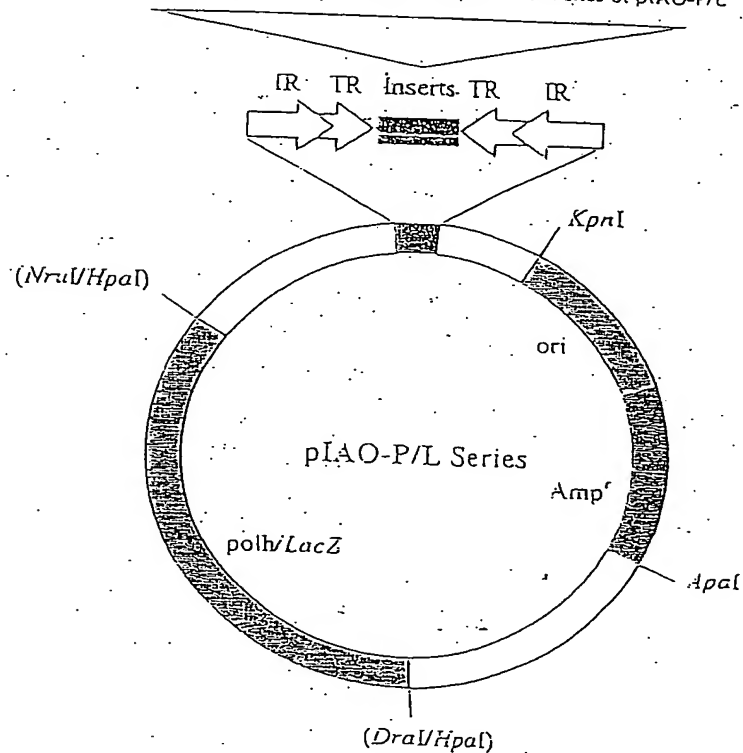


FIG. 2(B)

Sequence Range: 1 to 7670

100
AACGCGCGGGGAGAGGCGGTTTGCGTATTGGGCGCTCTTCCGCTTCCTCGCTCAC
TGA CTCGCTGCGCTCGGTCGTTTCGGCTGCGGCGAGCGGTATCAGC

200
TCACTCAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAA
GAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAG
 >Ori
 |
 |

300
GCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAA
ATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAA

400
GATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCT
GCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGT

500
GGCGCTTTCTCAATGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTTCGCT
CCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGC

600
TGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTAT
CGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGT

700
ATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAG
AAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTT

800
CGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCAACCGCTGGTAGCGG
TGGTTTTTTTGTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGA

FIG. 2(C1)

900

TCTCAAGAAGATCCTTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAA
ACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCT

1000

TCACCTAGATCCTTTTAAATTAAAAATGAAGTTTAAATCAATCTAAAGTATATA
TGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGC

<W H K I L S A

<_____AMP RESIST_____

1100

ACCTATCTCAGCGATCTGTCTATTTTCGTTTCATCCATAGTTGCCTGACTCCCCGTCG
TGAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGT

<G I E A I Q R N R E D M T A Q S G T T Y I V V I R S P K G D
P G L

<_____AMP
RESIST_____

1200

GCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCAATA
AACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAACTT

<A A I I G R S G R E G A G S K D A I F W G A P L A S R L L P
G A V K

<_____AMP
RESIST_____

1300

TATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGAAGCTAGAGTAAGTAGTTC
GC

CAGTTAATAGTTTGC GCAACGTTGTTGCCATTGCTACAGGCAT

<D A E M W D I L Q Q R S A L T L L E G T L L K R L T T A M
A V P M

<_____AMP
RESIST_____

1400

FIG. 2(C1)

CGTGGTGTACGCTCGTCGTTTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGAT
CAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGGT

<T T D R E D N P I A E N L E P E W R D L R T V H D G M N H
L F A T

<_____AMP
RESIST_____

1500

AGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCGAGTGTATCAC
TCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCATGCCAT

<L E K P G G I T T L L N A A T N D S M T I A A S C L E R V
T M G D

<_____AMP
RESIST_____

1600

CCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATA
GTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAATACGGGA

<T L H K E T V P S Y E V L D N Q S Y H I R G L Q E Q G A
D I R S

<_____AMP
RESIST_____

1700

TAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATTGGAAAACGTTCT
TCGGGGCGAAAACCTCTCAAGGATCTTACCGCTGTTGAGATCCAGT

<L V A G C L L V K F T S M M P F R E E P R F S E L I K G S N
L D L

<_____AMP
RESIST_____

1800

TCGATGTAACCCACTCGTGCACCCAACCTGATCTTCAGCATCTTTTACTTTACCCAG
CGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAA

<E I Y G V R A G L Q D E A D K V K V L T E P H A F V P L C F
A A F F

FIG. 2(C1)

<_____AMP
RESIST_____

1900

AGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTTCAATA
TTATTGAAGCATTATCAGGGTTATTGTCTCATGAGCGGATACAT

<P I L A V R F H Q I S M {SEQ ID NI: 58}

<_____AMP RESIST_____

2000

ATTTGAATGTATTTAGAAAAATAAACAAATAGGGGTTCCGCGCACATTTCCCCGA
AAAGTGCCACCTGACGTCTAAGAAACCATTATTATCATGACATTA

2100

ACCTATAAAAATAGGCGTATCACGGGGCCCTGAGGTGAACCAATTGTCACACGT
AATATTACGACAACCTACCGTGACAGGCTTTGATAACTCCTTCACG

<R Y F Y A Y * P A R L H V L Q * V Y Y * S L * R A C A K I V
G E R

<_____ORF1 N-TERM
[SPLIT]_____

2200

TAGTATTCACCGAGTGGTACTCCGTTGGTCTGTGTTCTCTTCCCAAATAAGGCAT
TC

CATTTATCATATACTTCGTACCACTGTCACACATCATGAGGA

<L I * R T T S R Q D T N R K G F L A N W K D Y V E Y W Q *
V D H P

<_____ORF1 N-TERM
[SPLIT]_____

2300

TTTTTATTCCATACTTACTTGGCTTGTTTGGGATATACATCCTAAACGGACACCGT
CCTCTAAAACCAAGTAACTGTTTCATCTATGGTCAAATGAGCCCC

<N K N W V * K A Q K P Y V D * V S V T R * F W T V T * R H
D F S G R

<_____ORF1 N-TERM
[SPLIT]_____

FIG. 2(C1)

2400

TGGAGTGTAAATTTTGTATGCACTGATGGATAAAGAGATCCCATATTTTCTAACA
GGAGTAAATACATCGTTTTCTCGAAGTGTGGGCCGTATACTTTTG

<S H L K T H V S P Y L S G M N K * C S Y I C R K R S T H A
T Y K Q

<_____ORF1 N-TERM
[SPLIT]_____

2500

TCATCCATTCTAAGACATCGTATCAAAAAATCCAAAACGATCCACAGACTCATT
CAGAGACGTACACATTGACAAAGATCGATCCAAAGAGGTCATCTG

<* G N * S M T D F F G F R D V S E N C L R V C Q C L D I W L
P * R

<_____ORF1 N-TERM
[SPLIT]_____

2600

TGGACATGTGGTTATCTTTTCTCACTGCTGTCATTACCAGAATACCAAAGAAAGC
ATAGATTTTCATCTTCATTTCGTGTCACGAAATGTAGCACCTGTCAT

<H V H P * R K E S S D N G S Y W L F C L N * R * E H * S I Y
C R D Y

<_____ORF1 N-TERM
[SPLIT]_____

2700

AGATTCCCGACGTTTCAATGATATCTCAGCATTTGTCCATTTTACAATTTGCGAAA
TTATCTCATCAGTAAAAAATAGTTTGAAGCATAAAAGTGGGTCA

<I G S T E I I D * C K D M K C N A F N D * * Y F I T Q L M F
T P *

<_____ORF1 N-TERM
[SPLIT]_____

2800

TATATATTGCGGCACATACGCGTCGGACCTCTTTGAGATCTGACAATGTTTCAGTG
CAGAGACTCGGCTACCGCTCGTGGACTTTGAAGTTAAATTCAGAT

<I Y Q P V Y A D S R K S I Q C H E T C L S P * R E H V K F N (SEQ ID NO:
NO: 59)

FIG. 2(C1)

< _____ ORF1 N-TERM
[SPLIT] _____

2900

ATAAAGACGCTGAAAATCATTTGATTTTCGCTCTAACATACCACCCTAAAGATTA
TAAATTTAATGAATTATTAAAATACGTACAACAATTGTCTGTAAA

3000

TCAACAACGCACAGAATCTAGCGCTTAATAAATGTACTAATAACAATGTATCGTG
TTTAAATACGCCGGACCAGTGAACAGAGGTGCGTCTGGTGCAAAC

3100

TCCTTTACTTTGAACACCAGGGAACTTCAAGGAGAATTCCTCCTCTTCAGCAG
AGTCGGTACCGGTCACCCGGGGATCCCCCTGCCCGGTTATTATT

3200

ATTTTTGACACCAGACCAACTGGTAATGGTAGCGACCGGCGCTCAGCTGGAATTC
CGCCGATACTGACGGGCTCCAGGAGTCGTCGCCACCAATCCCCAT

<K Q C W V L Q Y H Y R G A S L Q F E A S V S P S W S D D G
G I G M

< _____ LACZ _____

3300

ATGGAAACCGTCGATATTCAGCCATGTGCCTTCTTCCGCGTGCAGCAGATGGCGA
TGGCTGGTTTCCATCAGTTGCTGTTGACTGTAGCGGCTGATGTTG

<H F G D I N L W T G E E A H L L H R H S T E M L Q Q Q S Y
R S I N

< _____ LACZ _____

3400

AACTGGAAGTCGCCGCGCCACTGGTGTGGGCCATAATTCAATTCGCGCGTCCCGC
AGCGCAGACCGTTTTTCGCTCGGGAAGACGTACGGGGTATACATGT

FIG. 2(C1)

<F Q F D G R W Q H P G Y N L E R T G C R L G N E S P F V Y
P T Y M D

<_____LACZ_____

3500

CTGACAATGGCAGATCCCAGCGGTCAAAACAGGCGGCAGTAAGGCGGTTCGGGAT
AGTTTTCTTGCGGCCCTAATCCGAGCCAGTTTACCCGCTCTGCTAC
<S L P L D W R D F C A A T L R D P Y N E Q P G L G L W N V
R E A V

<_____LACZ_____

3600

CTGCGCCAGCTGGCAGTTCAGGCCAATCCGCGCCGGATGCGGTGTATCGCTCGCC
ACTTCAACATCAACGGTAATCGCCATTTGACCACTACCATCAATC
<Q A L Q C N L G I R A P H P T D S A V E V D V T I A M Q G
S G D I

<_____LACZ_____

3700

CGGTAGGTTTTCCGGCTGATAAATAAGGTTTTCCCCTGATGCTGCCACGCGTGAG
CGGTCGTAATCAGCACCGCATCAGCAAGTGTATCTGCCGTGCACT
<R Y T K R S I F L T K G Q H Q W A H A T T I L V A D A L T D
A T C Q

<_____LACZ_____

3800

GCAACAACGCTGCTTCGGCCTGGTAATGGCCCGCCGCCTTCCAGCGTTCGACCCA
GGCGTTAGGGTCAATGCGGGTCGCTTCACTTACGCCAATGTCGTT
<L L A A E A Q Y H G A A K W R E V W A N P D I R T A E S
V G I D N

FIG. 2(C1)

< _____ LACZ _____

3900

ATCCAGCGGTGCACGGGTGAACTGATCGCGCAGCGGCGTCAGCAGTTGTTTTTA
TCGCCAATCCACATCTGTGAAAGAAAGCCTGACTGGCGGTAAAT

<D L P A R T F Q D R L P T L L Q K K D G I W M Q S L F G S
Q R N F

< _____ LACZ _____

4000

TGCCAACGCTTATTACCCAGCTCGATGCAAAAATCCATTTCGCTGGTGGTCAGAT
GCGGGATGGCGTGGGACGCGGCGGGGAGCGTCACACTGAGGTTTT

<Q W R K N G L E I C F D M E S T T L H P I A H S A A P L T V
S L N E

< _____ LACZ _____

4100

CCGCCAGACGCCACTGCTGCCAGGCGCTGATGTGCCCCGGCTTCTGACCATGCGGT
CGCGTTCGGTTGCACTACGCGTACTGTGAGCCAGAGTTGCCCCGGC

<A L R W Q Q W A S I H G A E S W A T A N P Q V V R V T L
W L Q G A

< _____ LACZ _____

4200

GCTCTCCGGCTGCGGTAGTTCAGGCAGTTCAATCAACTGTTTACCTTGTGGAGCG
ACATCCAGAGGCACTTCACCGCTTGCCAGCGGCTTACCATCCAGC

<S E P Q P L E P L E I L Q K G Q P A V D L P V E G S A L P K
G D L

FIG. 2(C1)

<_____LACZ_____

4300

GCCACCATCCAGTGCAGGAGCTCGTTATCGCTATGACGGAACAGGTATTCGCTGG
TCACTTCGATGGTTTGCCCGGATAAACGGAAGTGGAAAACTGCT

<A V M W H L L E N D S H R F L Y E S T V E I T Q G S L R F Q
F F Q Q

<_____LACZ_____

4400

GCTGGTGTTTTGCTTCCGTCAGCGCTGGATGCGGCGTGCGGTCGGCAAAGACCAG
ACCGTTCATACAGAACTGGCGATCGTTCGGCGTATCGCCAAAATC

<Q H K A E T L A P H P T R D A F V L G N M C F Q R D N P T
D G F D

<_____LACZ_____

4500

ACCGCCGTAAGCCGACCACGGGTTGCCGTTTTTCATCATATTTAATCAGCGACTGA
TCCACCCAGTCCCAGACGAAGCCGCCCTGTAAACGGGGATACTGA

<G G Y A S W P N G N E D Y K I L S Q D V W D W V F G G Q
L R P Y Q

<_____LACZ_____

4600

CGAAACGCCTGCCAGTATTTAGCGAAACCGCCAAGACTGTTACCCATCGCGTGG
GCGTATTCGCAAAGGATCAGCGGGCGCGTCTCTCCAGGTAGCGAAA

<R F A Q W Y K A F G G L S N G M A H A Y E C L I L P R T E
G P L S L

FIG. 2(C1)

< _____ LACZ _____

4700

GCCATTTTTGATGGACCATTTCGGCACAGCCGGGAAGGGCTGGTCTTCATCCAC
GCGCGGTACATCGGGCAAATAATATCGGTGGCCGTGGTGTCTGGC
<W K K I S W K P V A P F P Q D E D V R A Y M P C I I D T A
T T D A

< _____ LACZ _____

4800

TCCGCCGCCTTCATACTGCACCGGGCGGGAAGGATCGACAGATTGATCCAGCG
ATACAGCGCGTCGTGATTAGCGCCGTGGCCTGATTCAATCCCCAGC
<G G G E Y Q V P R S P D V S K I W R Y L A D H N A G H G S
E N G L

< _____ LACZ _____

4900

GACCAGATGATCACACTCGGGTGATTACGATCGCGCTGCACCATTCGCGTTACGC
GTTGCTCATCGCCGGTAGCCAGCGCGGATCATCGGTCAGACGAT
<S W I I V S P H N R D R Q V M R T V R E S M A P L W R P D
D T L R N

< _____ LACZ _____

5000

TCATTGGCACCATGCCGTGGGTTTCAATATTGGCTTCATCCACCACATACAGGCC
GTAGCGGTCGCACAGCGTGTACCACAGCGGATGGTTTCGGATAATG
<M P V M G H T E I N A E D V V Y L G Y R D C L T Y W L P
H N P Y H

FIG. 2(C1)

< _____ LACZ _____

5100

CGAACAGCGCACGGCGTTAAAGTTGTTCTGCTTCATCAGCAGGATATCCTGCACC
ATCGTCTGCTCATCCATGACCTGACCATGCAGAGGATGATGCTCG
<S C R V A N F N N Q K M L L I D Q V M T Q E D M V Q G H L
P H H E

< _____ LACZ _____

5200

TGACGGTTAACGCCTCGAATCAGCAACGGCTTGCCGTTTCAGCAGCAGCAGACCA
TTTTCAATCCGCACCTCGCGGAAACCGACATCGCAGGCTTCTGCTT
<H R N V G R I L L P K G N L L L L G N E I R V E R F G V D C
A E A E

< _____ LACZ _____

5300

CAATCAGCGTGCCGTCGGCGGTGTGCAGTTCAACCACCGCACGATAGAGATTCG
GGATTTTCGGCGCTCCACAGTTTCGGGTTTTTCGACGTTTCAGACGTAG
<I L T G D A T H L E V V A R Y L N P I E A S W L K P N E V
N L R L

< _____ LACZ _____

5400

TGTGACGCGATCGGCATAACCACCACGCTCATCGATAATTTACCGCCGAAAGG
CGCGGTGCCGCTGGCGACCTGCGTTTCACCCTGCCATAAAGAACT
<T V R D A Y G G R E D I I E G G F P A T G S A V Q T E G Q
W L S V

FIG. 2(C1)

< _____ LACZ _____

5500

GTTACCCGTAGGTAGTCACGCAACTCGCCGCACATCTGAACTTCAGCCTCCAGTA
CAGCGCGGCTGAAATCATCATTAAAGCGAGTGGCAACATGGAAAT
<TVRLYDRLEGCMQVEAELVARSFDDNFR T
AVHFD

< _____ LACZ _____

5600

CGCTGATTTGTGTAGTCGGTTTATGCAGCAACGAGACGTCACGGAAAATGCCGCT
CATCCGCCACATATCCTGATCTTCCAGATAACTGCCGTEACTCCA
<SIQTTPKHL LSVDRFIGSMRWMDQDELYS
GDSW

< _____ LACZ _____

5700

ACGCAGCACCATCACCGCGAGGCGGTTTTCTCCGGCGCGTAAAAATGCGCTCAG
GTCAAATTCAGACGGCAAACGACTGTCCTGGCCGTAACCGACCCAG
<RLVMVALRNEGARLFASLDFESPLRSDQG
YGVW

< _____ LACZ _____

5800

CGCCCGTTGCACCACAGATGAAACGCCGAGTTAACGCCATCAAAAATAATTCCG
GTCTGGCCTTCCTGTAGCCAGCTTTCATCAACATTAAATGTGAGCG
<RGNCWLHFASNVGDFIIRTQGEQLWSEDV
NFTLS

FIG. 2(C1)

<_____LACZ_____

5900

AGTAACAACCCGTCGGATTCTCCGTGGGAACAAACGGCGGATTGACCGTAATGG
GATAGGTTACGTTGGTGTAGATGGGCGCATCGTAACCGTGCATCTG
<Y C G T P N E T P V F P P N V T I P Y T V N T Y I P A D Y G
H M Q

<_____LACZ_____

6000

CCAGTTTGAGGGGACGACGACGGGATCCGTTTTTTTATTACAAAACCTGTTACGAA
AACAGTAAAATACTTATTTATTCGGACCAACAATGTTTATTCTTA

<V L L T * E *

<____ORF1 N-TERM [S_____

<W N S P V V V P D T K K N C F Q * S F L L I S I * E S W C (SEQ ID NO: 60

<_____LACZ_____

6100

CCTCTAATAGTCCTCTGTGGCAAGGTCAAGATTCTGTTAGAAGCCAATGAAGAAC
CTGGTTGTTCAATAACATTTTGTTCGTCTAATATTTCACTACGCT

<R * Y D E T A L D L N Q * F G I F F R T T * Y C K T R R I N
* * A

<_____ORF1 N-TERM
[SPLIT]_____

6200

TGACGTTGGCTGACACTTCATGTACCTCATCTATAAACGCTTCTTCTGTATCGCTC
TGGACGTCTTCACTTACGTGATCTGATATTTCACTGTCAGAATC

<Q R Q S V S * T G * R Y V S R R Y R E P R R * K R S R I N *
Q * F G

<_____ORF1 N-TERM
[SPLIT]_____

FIG. 2(C1)

6300

CTCACCAACAAGCTCGTCATCGCCTTGCAGAAGAGCAGAGAGGATATGCTCATC
GTCTAAAGAACATCCCATTTTATTATATATTAGTCACGATATCTAT

< * W C A R * R R A S S C L P Y A * R R F F M G X (SEQ ID NO: 61)

< _____ ORF1 N-TERM

[SPLIT] _____

6400

AACAAGAAAATATATATATAATAAGTTATCACGTAAGTAGAACATGAAATAACA
ATATTAATTATCGTATGAGTTAAATCTTAAAAGTCACGTAAGAT

6500

AATCATGCGTCATTTTGACTCACGCGGTCGTTATAGTTCAAAATCAGTGACACTT
ACCGCATTGACAAGCACGCCTCAGCCGAGCTCCAAGCGGCGACTG

6600

AGATGTCCTAAATTGCAAACAGCGACGGATTCGCGCTATTTAGAAAGAGAGAGC
AATATTTCAAGAATGCATGCGTCAATTTTACGCAGACTATCTTTCT

_____ RIGHT TERMINAL

REPEAT _____ >

6700

AGGGTTAATCTAGAGGATCCTCTAGATTAACCCTAGAAAGATAATCATATTGTGA
CGTACGTTAAAGATAATCATGCGTAAAATTGACGCATGTGTTTTT

_____ >

_____ LEFT TERMINAL

REPEAT _____ >

6800

ATCGGTCTGTATATCGAGGTTTATTTATTAATTTGAATAGATATTAAGTTTATTA
TA
TTTACACTTACATACTAATAATAAATTCAACAAACAATTTAT

6900

TTATGTTTATTTATTTATTAACAAAAACAAAACTCAAAATTTCTTCTAAAGTA
ACAAAACTTTTAAACATTCTCTCTTTTACAAAAATAAACTTATTT

FIG. 2(C1)

7000

TGTACTTTAAAAACAGTCATGTTGTATTATAAAATAAGTAATTAGCTTAACTTAT
ACATAATAGAAACAAATTATACTTATTAGTCAGTCCAGAAACAAC

<D T W F C S

<____ORF1 C-TER____

7100

TTTGGCACATATCAATATTATGCTCTCGACAAATAACTTTTTTGCATTTTTTGCAC
GATGCATTTGCCTTTTCGCCTTATTTTAGAGGGGCAGTAAGTACA

<Q C M D I N H E R C I V K K C K K C S A N A K R R I K S P
C Y T C

<____ORF1

C-TERM_____

7200

GTAAGTACGTTTTTTCATTACTGGCTCTTCAGTACTGTCATCTGATGTACCAGGCA
CTTCATTTGGCAAAATATTAGAGATATTATCGCGCAAATATCTC

<Y T R K K M V P E E T S D D S T G P V E N P L I N S I N D R
L Y R

<____ORF1

C-TERM_____

7300

TTCAAAGTAGGAGCTTCTAAACGGTTACGCATAAACGATGACGTCAGGCTCATGT
AAAGGTTTCTCATAAATTTTTTGGGACTTTGAACCTTTTCTCCCT

<K L T P A E L R N R M F S S T L S M Y L N R M F K K R S Q
V K E G K

<____ORF1

C-TERM_____

7400

TGCTACTGACATTATGGCTGTATATAATAAAAGAATTTATGCAGGCAATGTTTAT
CATTCCGTACAATAATGCCATAGGCCACCTATTCGTCTTCCTACT

<S S V N H S Y I I F S N I C A I N I M G Y L L A M P W R N T
K R S

<____ORF1

C-TERM_____

FIG. 2(C1)

7500

GCAGGTCATCACAGAACACATTTGGTCTAGCGTGTCCACTCCGCCTTTAGTTTGA
TTATAATACATAACCATTGCGGTTTACCGGTACTTTCGTTGATA

<CTMVSCMQDLTDVGGKTQNYVMVMQPKG
TSENI

<_____ORF1

C-TERM_____

7600

GAAGCATCCTCATCACAAGATGATAATAAGTATAACCATCTTAGCTGGCTTCGGTT
TATATGAGACGAGAGTAAGGGGTCCGTCAAAACAAAACATCGATG

<SADDDCSLLYVMKAPKPKYSVLTLP GDFC
FMST

<_____ORF1

C-TERM_____

TTCCCACTGGCCTGGAGCGACTGTTTTTCAGTACTTCCGGTATCTCGCGTTTGTTT
GATCGCACGGTACC (SEQ ID NO: 57)

<GVPRSRSNKLVEPIERKNSRV T G (SEQ ID NO: 62)

<_____ORF1

C-TERM_____

FIG. 2(C1)

AACCGCGGGGAGAGGGCGGTTTGGGTATTGGGGCGCTCTTCGCTTCCTCGCTCACTGACTCGCTCGCTCGGTCTCGCTCGGCTCGGGCGAGCGGTATCAGC 100
 TCACTCAAAGCGGTAATACGGTTATCCACAGAATCAGGGGATAACCGAGGAAGAACATGTGAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAGAAG 200
 >ori
 CCGCGGTTCCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAACTCAGAGGTGGCGAAACCCGACAGGACTATAAA 300
 GATACCAAGCGTTTCCCCCTGGAAGCTCCCTCGTGCCTCTCTCTGTTCGACCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGT 400
 GCGCTTTCTCAATGCTCAGCTGTAGGTATCTCAGTTCCGGTGTAGGTCTCTCTCCCAAGCTGGGCTGTGTGCAGAACCCCGTTTCAGCCCGACCGC 500
 TCGGCTTATCCGGTAACCTATCTTCTTGAAGTCCACCCGTAAGACACGACTTATCGCCACTGCGAGCGGCTTGTACAGGATTAGCAGCGAGGT 600
 ATGTAGCGCGTGTACAGAGTTCTTGAAGTGTGGCTTAACCTACGGCTACCTAGAGGACAGTATTTGGTATCTGCGCTCTCTCTGAAGCCAGTTACCTT 700
 CGGAAGAGGTGTAGCTCTTGATCCGGCAACCAACCACCGCTGGTAGCGGTGGTTTTTTTGTTCAGCAGCAGATTACCGCGAGAAAAAGGA 800
 TCTCAAGAAGATCTTTGATCTTTCTACGGGCTCTGACGCTCAGTGAACGAAAACCTCAGCTTAAGGATTGTGTCATGAGATTATCAAAAAGGATCT 900
 TCACCTAGATCCTTTTAAATTAAAAATGAAGTTTAAATCAATCTAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTATCAGTGAGGC 1000
 <W H K I L S A
 < AMP RESIST
 ACCATCTCAGCGATCTGCTATTTCTTCATCCATAGTTGCTGACTCCCGCTGCTGTAGATACCTACGATACGGGAGGGCTTACCATCTGGCCCCAGT 1100
 <G I E A I Q R N R Z D M T A Q S G T T Y I V V I R S P K G D P G L
 < AMP RESIST
 GCTGCAATGATACCGCGAGACCCACGCTCAGCGCTCCAGATTTATCAGCAATAAACCGAGCCGCGGAGGGCCGAGCGCAGAAGTGGTCTCTCAACTT 1200
 <A A I I G R S G R E G A G S K D A I P W G A P L A S R L L P G A V K
 < AMP RESIST
 TATCCGCTCCATCCAGTCTATTAATTGTTGCGGGGAGCTAGAGTAAGTATGCTCCAGTTAATAGTTTGGCGAAGCTTGTGCTTGTCTACAGGCAT 1300
 <D A E M W D I L Q Q R S A L T L L S G T L L K R L T T A M A V P M
 < AMP RESIST
 CGTGGTGTACGCTCGCTGCTTGGTATGGCTTCATTCAGCTCCGCTTCCCAACGATCAGCGGAGTTACATGATCCCCATGTTGTGCAAAAAAGCGGT 1400
 <T T D R E D N P I A E N L E P E W R D L R T V H D G M N H L F A T
 < AMP RESIST
 AGCTCCTTCGCTCCTCCGATCGTTGTGCAAGTAAGTTGGCGCGAGTGTATCACTCATGTTTATGGCAGCACTGCATAATCTCTTACTGTCAAGCAT 1500
 <L E K P G G I T T L L L N A A T N D S M T I A A S C L S R V T M G D
 < AMP RESIST
 CCGTAAGATGCTTTTCTGTGACTGGTGTGACTCAACCAAGTCATTCTGAGAAATAGTGTATGCGCGACCGAGTTGCTCTTSCCGCGCTCATACGGGA 1600
 <T L H K E T V P S Y E V L D N Q S Y E I R R G L Q E Q G A D I R S
 < AMP RESIST
 TAATACCGCGCCACATAGCAGAACTTAAAAAGTCTCATCATTGGAAGACGTTCTTCGGGGCGAAACTCTCAAGGATCTTACCGCTGTGAGATCCAGT 1700
 <H V A G C L L V K F T S M M P F R E P R F S Z L I R G S N L D L
 < AMP RESIST
 TCGATGTAAACCACTCGTGCACCCCACTGATCTTCAGCATCTTTTACTTTGACCAAGCTTCTCGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAA 1800
 <E I Y G V R A G L Q D B A D K V K V L T E E F H A F V P L C F A A F F
 < AMP RESIST

FIG. 2(C2) cont.

1900
AGGGATTAAGGCGGACACCGAAATGTTGAATACTCATCTCTTCTCTTTTCAATATTATTGAAGCAITTCAGGGTTATTGTCTCATGAGCGGATACAT
<P I L A V R F H Q I S M (SEQ ID NO: 58)
<AMP RESIST

2000
ATTGGAATGTAATTAAGAAAAATAACAAATAGGGGTTCCGCGCACATTCCTCCGAAAGTGGCACCTGACGTCTAAGAAACCATTTATCAIGACATTA

2100
ACCTATAAAATAGCGGTATCAGGGGCGCTGAGGTGAACCAATTGTACACGTAATATTACGACAACCTACCGTGACAGGCTTTGATAACTCTCTCAGC
<R Y F Y A Y * P A R L H V L Q * V Y Y * S L * R A C A K I V G Z R
<ORF1 N-TERM (SPLIT)

2200
TAGTATTACCGAGTGGTACTCCGTTGGTCTGTGTTCTCTTCCAAATAGGCAATTCATTATCATATACTTCTGACCACTGTACACATCATGAGGA
<L I * R T T S R Q D T N R K G F L A N W K D Y V S Y W Q * V D H P
<ORF1 N-TERM (SPLIT)

2300
TTTTATTCCATACTTACTTGGCTTGTGTTGGGATATACATCTTAACGGGACCGCTCTCTAAACCAAGTAAGTGTTCATCTATGGTCAAATGAGCCCC
<N K N W V * K A Q R P Y V D * V S V T R * F W T V T * R R D F S G R
<ORF1 N-TERM (SPLIT)

2400
TGGAGTGTAAATTTGTATGCACTGATGATAAGAGATCCCATATTTTCTAACAGGAGTAATAATCATGTTTTCTCGAAGTGTGGGCGGTATATCTG
<S H L K T H V S P Y L S G M N K * C S Y I C R R R S T H A T Y K Q
<ORF1 N-TERM (SPLIT)

2500
TCATCCATTCTAAGACATCGTATCAAAAATCCAAAGGATCCAGACTCATTACAGAGACGTACACATTGACAAAGATCGATCCAAAGAGGTCACTCG
<* G N * S M T D F F G F R D V S E N C L R V C Q C L D I W L P * R
<ORF1 N-TERM (SPLIT)

2600
TGGACATGGGTATCTTTTCTCACTGCTGTCATTACCAGAAATACCAAGAAAGCATAGATTTTCATCTTCATTCTGTGTCAGCAAAATGTAGCACTGTCTAT
<H V H P * R K E S S D N G S Y W L F C L N * R * E H * S I Y C R D Y
<ORF1 N-TERM (SPLIT)

2700
AGATTCCGACGTTTCAATGATATCTCAGCATTGTGTCATTTCACAAATTCGCGAAATATCTCATCAGTAAAAATAGTTTGAAGCATAAAAGTGGGTCA
<I G S T E I I D * C K D M K C N A F N D * * Y P I T Q L M F T P *
<ORF1 N-TERM (SPLIT)

2800
TATATATTGCGGCACATACGCGCTCGGACCTCTTTGAGATCTGACAATGTTCACTGACAGAGACTCGGCTACCGCTCGTGGACTTTGAAGTTAAATTCAGAT
<I Y Q P V Y A D S R K S I Q C H E T C L S P * R R E V K P N (SEQ ID
<ORF1 N-TERM (SPLIT) NO 59)

2900
ATAAAGACGCTGAAAATCATTTGATTTCGCTCTAACATACCACCTAAAGATTAATTAATTAATGAATTATTAATAACGTACAACCAATTGCTCTGTAAG

3000
TCAACAACCGCAGAGAATCTAGCGCTTAATAAATGATTAATAACAAATGATGTCGTTTTAATACGCGCGGACCAAGTGAACAAGGTGCGCTCTGGTGCAAAAC

3100
TCCTTTACTTTGAACACCGGAAACTTCAAGGAGAATTTCTCTCTCTCTCAGCAGAGTCCGTTACCGGTCACCGCGGATCCCTCCCTGCCCCGTTATTATT

3200
ATTTTTCACACAGACCAACTGGTAATGTTAGCGACCGGCGCTCAGCTGGAAATCCGCGGATACTGACGGGCTCCAGGAGTCTGTCGCCACCAATCCCCAT
<K Q C W V L Q Y H Y R G A S L Q F E A S V S P S W S D D G G I G M
<LACE

3300
ATGGAACCGCTGATATTACGCCATGTGCTTCTTCCGCGTGCAGCAGATGCGGATGCGTGGTTTCCATCAGTTGCTGTTTACTGTAGCGGCTGATGTTG
<H P G D I N L W T G E E A E L L E R E S T E M L Q Q Q S Y R S I N
<LACE

3400
AACTGGAAATCGCGCGCGCCACTGGTGTGGGCCATAATTCAATTCGCGCGCTCCCGCAGCGCAGACCGTTTTCGCTCGGGAAGACGTACGGGTATACATGT
<F Q P D G R W Q E P G Y N L E R T G C R L G N S 3 ? F V Y ? T Y M D
<LACZ

3500
CTGACAAATGCGCAGATCCAGCGGTCAAAACAGGCGGCGAGTAAAGCGGTCGGATAGTTTCTTGCGCCCTATTCAGAGCCAGTTTACCCGCTCTGCTAC
<S L P L D W R D P C A A T L R D P Y N E Q P G L G L W N V R E A V
<LACZ

FIG. 2(c2) cont.

CTGCCAGCTGGCAGTTCAAGCCATCCGCCGCCGATSCGGTGTATCGCTCGCCACTTCAACATCAACGGTAATCGCCATTGACCACTACCATCAATC 3500
 <Q A L Q C N L G I R A P H P T D S A V E V D V T I A M Q G S G D I
 LACZ

CGGTAGGTTTTCCGGCTGATAAATAAGGTTTTCCCTGAIGCTGCCAGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 3700
 <R Y T X R S I F L T N G Q H Q W A H A T T I L V A D A L T D A T C Q
 LACZ

GCAACAACGGCTGCTTCGGCCTGTAATGSCCGCCGCCCTCCAGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 3800
 <L L A A Z A Q Y H G A A K W R E V W A N P D I R T A E S V G I D N
 LACZ

ATCCAGCGGTGAGCGGTGACTGATCGCCAGCGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 3900
 <D L P A R T P Q D R L P T L Q K D G I W M Q S L F G S Q R N F
 LACZ

TGCCAGCGGTGACTGATCGCCAGCGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 4000
 <Q W R E N G L E I C F D M E S T T L H P I A H S A A P L T V S L N E
 LACZ

CGCCAGAGCGCACTGCTGCGAGCGCTGATGTGCCCGGCTTCTGACCATCGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 4100
 <A L R W Q Q W A S I H G A E S W A T A N P Q V V R V T L W L Q G A
 LACZ

GCTCTCCGGGTGCGGTAGTTCAAGCGGTGATCAATCACTGTTTACCTTGTGGAGCGCATCCAGAGCGCATCAGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 4200
 <S E P Q P L E P L E I L Q K G Q P A V D L P V E G S A L P K G D L
 LACZ

GCCACCATCGCTGAGCGGTGATGTGCCCGGCTTCTGACCATCGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 4300
 <A V M W H L L E N D S H R F L Y Z S T V S I T Q G S L R F Q F F Q Q
 LACZ

GCTGGTGTGTTTCTGCTGAGCGGTGATGTGCCCGGCTTCTGACCATCGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 4400
 <Q H K A E T L A P H P T R D A F V L G N M C F Q R D N P T D G F D
 LACZ

ACCGCGGTGAGCGGTGATGTGCCCGGCTTCTGACCATCGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 4500
 <G G Y A S W P N G N E D Y K I L S Q D V W D W V F G G Q L R P Y Q
 LACZ

CGAAACGGCTGCGAGTATTAGCGAAACCGCAAGACTGTTACCATCGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 4600
 <R F A Q W Y K A F G G L S N G M A E A Y E C L I L P R T E G P L S L
 LACZ

GCCATTTTGTATGGACCATTTCCGCCAGCGCGGAAGGGCTGCTTCTGACCATCGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 4700
 <W K K I S W K P V A P P P Q D S D V R A Y M P C I I D T A T T D A
 LACZ

TCCGCCGCTTCACTGACCGCGCGGAAGGATCGACAGATTGATCCAGCGCATACAGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 4800
 <G G G E Y Q V P R S P D V S R I W R Y L A D B N A G H G S E N G L
 LACZ

GACCAATGATCACTCGGGTGATTACGATCGCGCTGACCATCGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 4900
 <S W I I V E P H N R D R Q V M R T V R E S M A P L W R P D D I L R N
 LACZ

TGATTGGACCAATGCGGTGTTCAATATTGGCTTCTGACCATCGCGGTGAGCGGTGTAATCAGCACCGCATCAGCAAGTGATCTGCCGTGCACT 5000
 <M P V M G H T E I N A E D V V Y L G Y R D C L T Y W L P H N L P Y H
 LACZ

FIG. 2(C2)

CGACAGCGCACGCGGTAAAGTGTCTCTCTCATCAGCAGATATCTGCGACCATCGTCTGCTCATCCATGACCTGACCATGCAGAGGATGATGCTCG
 <S C R V A N F N N Q K M L L I D Q V M T Q E D M V Q G H L P E H E
 LACZ

5100

TGACGGTTAACGCTCGAATCAGCAACGGCTTGCCGTTACGACGACGACACCATTTTCAATCCGACCTCGCGGAAACCGACATCGCAGGCTTCTGCTT
 <H R N V G R I L L P K G N L L L L G N E I R V E R F G V D C A E A E
 LACZ

5200

CAATCAGCGTGCCTCGCGGTGTGCAATCAACCACCGCAGGATAGAGATTGCGGATTTGCGCGCTCCACAGTTTCGGGGTTTTCGACGTTTCAGACGTTAG
 <I L T G D A T H L E V V A R Y L N P I E A S W L K P N E V N L R L
 LACZ

5300

TGTGACGCGATCGGCATAACCAACAGCTCATCGATAATTTACCGCGCAAGGCGCGGTGCGCTGCGGACCTGCGTTTACCGCTGCCATAAAGAACT
 <T V R D A Y G G R E D I I E G G F P A T G S A V Q T E G Q W L S V
 LACZ

5400

GTTACCGTAGGTAGTACGCAACTCGCGGCACATCTGACCTTCAGCTCCAGTACAGCGCGGCTGAATCATCATTAAGCGAGTGGCAACATGGAAT
 <T V R L Y D R L E G C M Q V E A E L V A R S F D D N P R T A V H F D
 LACZ

5500

CGCTGATTTGTAGTTCGTTTATGCAACGAGAGCGTACGCAAAATGCGCTCATCGCCACATATCTGATCTTCCAGATAACTGCGGTCACTCCA
 <S I Q T T P K H L L S V D R F I G S M R W M D Q D E L Y S G D S W
 LACZ

5600

ACGACGACCATCACCGCGAGGCGGTTTCTCCGCGCGTAAATGCGCTCAGGTCAAATTCAGACGCGCAACGACTGTCTGCGCGTAAACCGACCCAG
 <R L V M V A L R N E G A R L F A S L D F E S P L R S D Q G Y G V W
 LACZ

5700

CGCCCGTTGCACACAGATGAACCGCGGTTAACGCCATCAAAATAATTCGCGTCTGGGCTTCTGTAGCCAGCTTTCATCAACATTAATGTGAGCG
 <R G N C W L H F A S N V G D F I I R T Q G E Q L W S E D V N F T L S
 LACZ

5800

AGTAACACCCGTCGGATTCTCGGTGGGAACAAACGCGGATTGACCGTAAAGGATAGGTACGTTGGTGTAGATGGGCGCATCGTAACCGTGCATCTG
 <Y C G T P N E T P V P P P N V T I P Y T V N T Y I P A D Y G H M Q
 LACZ

5900

CCAGTTTGAGGSGACGACGACGCGGATCCGTTTATTAACAAACTGTTACGAAACAGTAAATACTTATTATTTCGGAACCAACAGTTTATTCTA
 <W N S P V V V P D I K K N C F Q * S F L L I S I * E S W C (SEQ ID NO: 60)
 LACZ

6000

CTCTAATAGTCTCTGTGGCAAGGTCAAGATTCTGTTAGAAGCCATGAAGAACCTGGTTGTTCAATAACATTTTGTCTCTAATATTCTACTACGCT
 <R Y D E T A L D L N Q * F G I F P R T T * Y C K T R R I N * A
 ORF1 N-TERM (SPLIT)

6100

TGACGTTGGCTGACACTTCTGTACCTCATCTATAACGCTTCTTCTGTATCGCTCTGGACGCTTTCACCTTACGTGATCTGATATTCTACTGTGAGAATC
 <Q R Q S V S * T G * R Y V S R R Y R P R R * K E S R I N * Q * F G
 ORF1 N-TERM (SPLIT)

6200

CTCACCAACAGCTCGTCATCGCCCTTGCAGAGAGCAGAGAGGATATGCTCATCGTCTAAAGACATCCCATTTTATTATATATTAGTCACGATATCTAT
 <* W C A R * R R A S S C L P Y A * R R F P M G X (SEQ ID NO: 61)
 ORF1 N-TERM (SPLIT)

6300

AACAGAAAATATATATAATAAGTTATCACGTAGTAGAACATGAAATAACAATATTATATCGTATGAGTTAATCTTAAAGTCACGTAAAGAT
 5400

AATCATGCGTCAATTTGACTCACGCGGTGTTATAGTTCAAANTCAGTGAACCTTACCGCATTGACAGCACGCGCTCAGCCGAGCTCCAAGCGGCGACTG
 5500

AGATGTCCTAAATTGCAACAGCGACGATTCGCGCTATTAGAAAGAGAGCAATATTCAAGAAATGCAATGCGCTCAATTTACGCGAGACTATCTTCT
 5600

RIGHT TERMINAL REPEAT

FIG. 2(C2) cont.

6700
 AGGGTTAATCTAGCTTTTCTAATTTAAGCTTTGTCAGGTTACCACTACTAAGGTTGAGGCTCAAGAGGGTGTCTCTGTCGTAGGTAATTAAGTACCTGACC
 <K R I * G K D P * W S S L N Y A * S P T D Q R L Y I V S R
 < EA31 (296); CODON START=1; DB XREF=PID:G215131; TRA (SPLIT)
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) (SPLIT)

6800
 TGTGAGCTTAATATTCTATATTGTTGTTCTTTTCGCAAAAAGTGGGGAAGTGAATGAATATTCTTAACATTATCTGCATCAATACCTTCGAG
 <D L K I N * I T T R B A F F H P L S Y H F * K * C K D A D Y R G L
 < EA31 (296); CODON START=1; DB XREF=PID:G215131; TRA (SPLIT)
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) (SPLIT)

6900
 CATTATTAAGCAATTTGCTATAGTTCTGCTGGAAGAGGTAATTTTTCATTGTACITTTACCTTCATCTCTGTTTATTATCATCGCTTTTAAACGGT
 <M * * A N R * (SEQ ID NO: 64)
 < EA31 (296); CO
 <S Y T R A P L P L K K M T S * R * R Q E N D D S K F R N
 < EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) (SPLIT)

7000
 TCGACCTTCTAATCTATCTGACCATTAATTTTGTAGATGTTTCATAGAAAGCTCTGAATCAACGGACTGCGATAATAAGTGGTGGTATCCAGAA
 <S R R I R D S W * L K K S H N * L F A R F * R V A I I L P P I W P
 < EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) (SPLIT)

7100
 TTTGTCACTTCAAGTAAAAACACCTCAGGAGTAAAGACCTAAGTTCTCACCGAATGTCTCAATATCCGGACGGATAATATTTATTGCTTCTCTGACC
 <K D S * T F V G * S N F C R L E * R I D * Y G S P Y Y K N S R K V
 < EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) (SPLIT)

7200
 GTAGGACTTTCCACATGCGAGGATTTTGGAACTCTTTCGCTACTACTGSGGAATGAGTTGCAATATTGCTACACCATTCGCTGCGATCGAGTAACTGCT
 <T P S E V H L I K S G R A T S S P F S N C N N S C W Q T C R T L R K
 < EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) (SPLIT)

7300
 TAAATGTTGTAATAAAGCAGAGCAAGGTTGATGCAATGAACTCTGCTTCATCGAATAAACTAATGACTTTTCGCCAACGACATCTACTAATCTT
 <I N T F F C L A F T S A S S G R T * R I F S I V K R W R C R S I R
 < EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) (SPLIT)

7400
 GTGATAGTAAATAAACAATTGCAATGTCAGGCTCATTGCAAGCAGATATTCTGGATATTGTCATAAAACAATTAGTGAATTTATCATCGTCCACTT
 <H Y Y I F C N C T W L E N S A S I E P Y Q * L V I * H I * * R G S
 < EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) (SPLIT)
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) (SPLIT)

FIG. 2(C2) cont.

7500
 GAATCTGTGGTTTCATTACGTCTTAACCTTCATATTAGAAATGAGGCTGATEAGTTCATATTGAAAAGTTTTCATCACTACTTATTTTTCATAGC
 < S D T T * * T K V R * I * F H P Q H T G Y K F L K * * * K T K Q Y S
 < EA59 (525); CODON START=1; DB_XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

7600
 TTCAAGCCAGAGTTGTCTTTTCTAICTACTCTCATACCAACATAAATGCTGAAATGAATTCACCGGAGATCGCCTAGTGATTTTAACTATTGCTG
 < A L T T K X * R S E Y L W Y I S F N I R L P S R T I K F * Q Q
 < EA59 (525); CODON START=1; DB_XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

7700
 GCAGCATCTTCAGTCCATATAAAAGTATTGTGTAACCTTTTCTGGGTCAGGTTCTTTTAGGAGGAGTAAAGGATCAATGCACTAAACGAACTG
 < C C E Q T W Y L L I T Y R K S P * T T R * S S Y F S * I C * V F S
 < EA59 (525); CODON START=1; DB_XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

7800
 AAACAAGCGATCGAAATATCCCTTTGGGATCTTGACTCGATAAGTCTATTATTTCAGAGAAAAATATTCATTGTTTCTGGGTTGGTGATTGCAACC
 < C A I S F I G K P N K V R Y T * * K * L F P I * Q K R P Q H N C W
 < EA59 (525); CODON START=1; DB_XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

7900
 AATCATTCATCAAAATGTTGTTTACCAACCCATTCCGCCCGATATAAGCATGAATGTTCTGCTGGGCATAGAAATTAACCGTCAACCTCAAAAGGT
 < D N W E F N N N * W V W E A R Y F C S H E H Q A Y F * G D G * F T
 < EA59 (525); CODON START=1; DB_XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

9000
 ATAGTTAAATCACTGAATCCGGGAGCACTTTTCTATTAAATGAAGTGGAAATCTGACAATTCGCAACCATTAACACAGCTGCGACTGTCCAT
 < Y N P * Q I R S C K K * * I P L P F R V I R A F W K V C T R V T W
 < EA59 (525); CODON START=1; DB_XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

9100
 GAATTTCTGAAAGAGTACCCCTCTAAGTAATGAGGTGTTAAGGACGCTTTCTTTCAATGTCGGCTAATCGATTGGCCATACCTACTAAATCCTGAAT
 < S N R F S N G R * T I L H * P R K * K * E R S I S K A M S S E G S Y
 < EA59 (525); CODON START=1; DB_XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

9200
 AGCTTTAAGAAGGTTATGTTTAAACCATCGCTTAATTGCTGAGATTACATAGTAGTCAATGCTTTCACCTAAGGAAAAACATTTCAAGGAGTTGA
 < S * S P * T * F W R K I Q Q S * C L L * H K * R L P F V N * 9 T S
 < EA59 (525); CODON START=1; DB_XREF=PID:G215132; TRA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

FIG. 2(C2)

8300
CTGAATTTTATCTATTAATGAATAAGTCTTACTTCTTTTGGACCTACAAAACCAATTTTAAACATTTCCGATATCGCAITTTTCACCATGCTCAT
< Q I X * R N I F L E X S R R K S R C F W N * C K R Y R M K * W A *
< EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
< MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8400
CAAAGACAGTAAGATTAACATTGTAAACAAAGGAATAGTCATTCCACCATCTGCTCGTAGGAATGCCCTTATTTTTCTACTGCAGGAATATACCCGCC
< L C Y S L V N Y C L F L * E L W R S T P I G * K K R S C S Y V (SEQ ID
< EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA NO: 65)
< MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8500
TCTTTCAATAACACTAARCTCCACATATGTACCCCTTAATTATTAATAAACCCCAATTTATTGGCGGCAACACAGGATCTCTCTTTTAAGTTAC
< MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8600
TCTCTATACATACGTTTTCCATCTAAAAATAGTAGTATTGAACCTAACGGGGCACTGATTGTAGTTTTOCATATTAGCTTTCTGCTCTCTTTTGG
< MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8700
TAACCCACITGTTATTCATGTTGCAITGGTGCACTGTTTATACCAACGATATAGTCTATTAAATGCAATATATGATCGCCGAACGATTAGCTCTTCAGGCTT
< MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8800
CTGAAGAAGCGTTTCAAGTACTAATAAGCCGATAGATAGCCGGAAGCTTCGATGCCATTTTCATAGTGTAACTTCCGCTCTCGCTCATACACAGACA
< MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8900
TTCCTACAGTTATGCGCGAAAGGTATGCACTGCTGGGTGCGGGAAGTCGTGAAGAAAGAGTCAGCTCGCTCGTTGACATCACTGCAATCTCTTA
< MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

9000
CTGGTATGCAAGTCTAGTGGGTGGCAGCAAAAGCTAGATTAAACCTAGAAAGATAATCATATTGTACGTACGTTAAGACATCTATCGCTAAATTTG
< MRNA-PL (ALT.; VIA T'J4 TERM
< MRNA-PL (ALT.; VIA T'J3 TERM
< MRNA-PL (ALT.; VIA T'J2 TERM
< MRNA-PL (ALT.; VIA T'J1 TERM
LEFT TERMINAL REPEAT

9100
ACGCATGTGTTTATCGGCTCTGTATCTCGAGGTTTATTATTAATTGAATAGATATTAAAGTTTATTATATTACACTACATACATAATAATAATTC
>

9200
ARCAAAACAATTTATTTATGTTTATTTATTTATTAATAAAAAACAAAACTCAAAATTTCTCTAAAGTAACAAAACTTTAAACATCTCTCTTTTACAA

9300
AAATAAACTTATTTGTACTTAAAAACAGTCATGTTGATTATAAAATAAGTATTTGCTTAACTTATACATAATAGAAACAAATTATACCTTATTAGTC
<D
<

Fig. 2(c2) cont.

9400
AGTCCAGAAACAACCTTTGGCAGATATCAATTAATGCTCTCGACAAATAACTTTTTTGCAATTTTGGCAGGATGCATTTGCCTTTCCGCTTATTTTAGAG
< T W F C S Q C M D I N H E R C I V K K C K K C S A N A K R R I X S
< ORF1 C-TERM

9500
GGGCAGTAAGTACAGTAAGTACGTTTTCATTACTGCTCTTCAGTACTGTCACTGTACAGGCACTTCATTTGGCAAAATATTAGAGATATTAT
< P C Y T C Y T R K K M V P E E T S D D S T G P V S N P L I N S I N D
< ORF1 C-TERM

9600
CGCGCAATATCTCTTCAGAGTAGGAGCTTCTAAACGGTACGCATAAACGATGACGTCAGGCTCATGTAAAGGTTCTCATAAATTTTGGGACTTTG
< R L Y R X L T P A E L R N R M F S S T L S M Y L N R M F K K R S Q
< ORF1 C-TERM

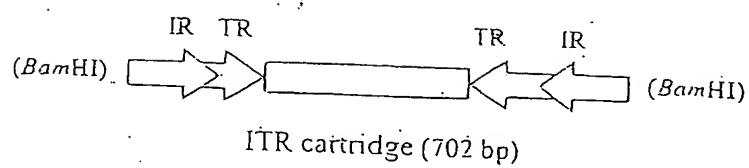
9700
AACCTTTCTCCCTTGCTACTGACATTATGGCTGTATATAATAAAGATTTATGCGAGCAATGTTTATCATTCGGTACAAATATGCCATAGGCCACCTA
< V X E G K S S V N H S Y I I F S N I C A I N I M G Y L L A N P W R
< ORF1 C-TERM

9800
TTCGTCTTCTCTGAGGTCATCAGAACAGATTGGTCTAGCGTGTCCTCCGCTTCTAGTTTGATTATAATACATAACCATTTGCGGTTTACCGG
< N T K R S C T M V S C M Q D L T D V G G K T Q N Y Y M V M Q P K G T
< ORF1 C-TERM

9900
TACTTTCGTTGATAGAAGCATCCTCATCACAAGATGATAAATAGTATACCATCTAGCTGGCTTCGGTTTATATGAGACGAGAGTAAGGGCTCCGTCAAA
< S E N I S A D E D C S S L L Y V M R A P K P K Y S V L T L P G D F
< ORF1 C-TERM

ACAAACATCGATGTTCCCACTGGCCTGGAGCGACTGTTTTTCACTACTCCGGTATCTCGCGTTTGTGATCGCACGGTACC (SEQ ID NO: 63)
< C F M S T G V P R S R S N K L V E P I E R K N S R V T G (SEQ ID NO: 66)
< ORF1 C-TERM

A.



B.

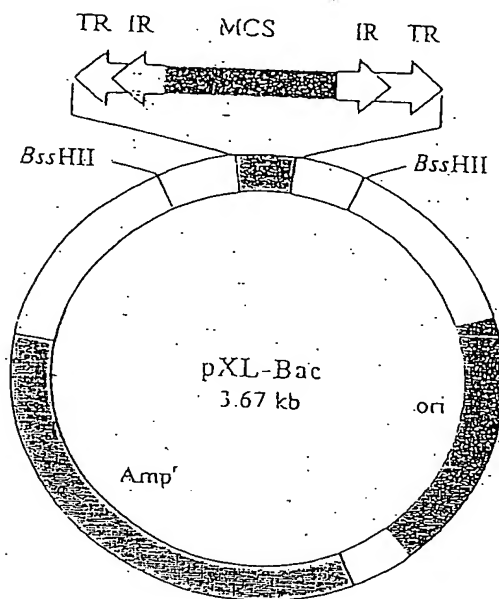


FIG 3

ITR Cartridge Sequence

Sequence Range: 1 to 707

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GGATCCCATGCGTCAATTTTACGCAGACTATCTTTCTAGGGTTAATCTAG      50
_____ RIGHT TERMINAL REPEAT _____>
CTGCATCAGGATCATATCGTCGGGTCTTTTTTCCGGCTCAGTCATCGCCC      100
AAGCTGGCGCTATCTGGGCATCGGGGAGGAAGAAGCCCGTGCCTTTTCCC      150
GCGAGGTTGAAGCGGCATGGAAAGAGTTTGCCGAGGATGACTGCTGCTGC      200
ATTGACGTTGAGCGAAAACGCACGTTTACCATCATGATTCGGGAAGGTGT      250
GGCCATGCACGCCTTTTAACGGTGAAGTGTTCGTTTCAGGCCACCTGGGATA      300
CCAGTTCGTCGCGGCTTTTCCGGACACAGTTCGGATGGTCAGCCCGAAG      350
CGCATCAGCAACCCGAACAATACCGGCGACAGCCGGAAGTCCCGTGCCGG      400
TGTGCAGATTAATGACAGCGGTGCGGCGCTGGGATATTACGTGAGCGAGG      450
ACGGGTATCCTGGCTGGATGCCGCGAGAAATGGACATGGATAACCCCGTGAG      500
TTACCCGGCGGGCGCGCCTCGTTCATTACGTTTGAACCCGTGGAGGA      550
CGGGCAGACTCGCGGTGCAAATGTGTTTACAGCGTGATGGAGCAGATGA      600
AGATGCTCGACACGCTGCAGAACACGCAGCTAGATTAACCCTAGAAAGAT      650
_____>
AATCATATTGTGACGTACGTTAAAGATAATCATGCGTAAAATTGACGCAT      700
_____ LEFT TERMINAL REPEAT _____>

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GGGATCC (SEQ ID NO: 40)

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FIG. 3(c1)

FIG. 3 (c2)

pXL-Bac

Sequence Range: 1 to 3662

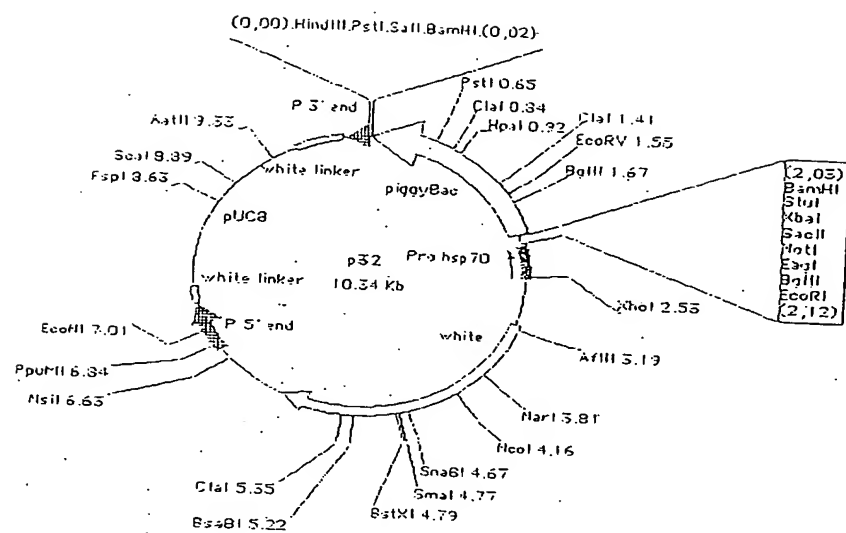
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CTAAATTGTAAAGCGTTAATATTTTGTAAATTCGCGTAAATTTTGTAAATCAGCTCATTTTTTAAACCAATAGCCGGAATCGGCAAAATCCCTTAT 100
AAATCAAAGAATAGACCGAATAGGGTTGAGTGTGTTCAGTTTGGAAACAAGAGTCCACTATTAAAGAACGTGCACTCCAACGTCAAAGSGCCAAATA 200
CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCTTAATCAAGTTTTTTGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCTTAARGGGAG 300
CCCCGATTAGAGCTTGAACGGGAAGSCCGCGAAGCTGGCGAGAAGGAAGGGAAGAAAGCGAAGGAGCGGGCGTAGGGCGCTGGCAATGTAGCG 400
GTACGCTGCGCGTAACCAACACACCCGCCGCTTAATGCGCCGCTACAGGGCGCGTCCATTGCCATTGAGGCTGCGCAACTGTTGGGAAGGGCGAT 500
CGGTGCGGGCTCTTTCGCTATTACSCCACTGGCGAAGGGGGATGTGCTGCAAGCGGATTAAGTTGGGTAAACGCCAGGGTTTCCAGTCAAGCGGTG 600
TAAACGACGGCCAGTGAAGCGGCTCTGTTCAATCAGTTTTTGAACCCGTGGAGGAGCGGCGAGACTCCGGTGCATAATGTGTTTACAGCGTGATGGAG 700
CAGATGAAGATGCTGACACGCTGCAGAACACCGAGCTAGATTAAACCTGAGAGATAATCATATTGTGACGTACGTTAAGATAATCATGCGTAAATTT 800
                                LEFT TERMINAL REPEAT
                                >
>MCS_of_pBSII
|
GACGCATGGGATCTGTAAATCAGACTCACTATAGGGCGAATTGGGTACCGGGCCCCCCCCCTCGAGGTGACGGTATCGATAAGCTTGATATCGAATTCCTGC 900
>
AGCCCCGGGGATCCACTAGTTCTAGAGCGGCCCGCACCGCGGTGAGCTCCAGCTTTTGTTCCTTTAGTGAGGGTTAATTAGATCCCATGCGTCAATTT 1000
>
TACGCAGACTATCTTTCTAGGGTTAATCTAGCTGCATCAGGATCATATCGTCGGGTCTTTTTCGGGCTCAGTCAATGCCCAAGCTGGCGCTATCTGGGC 1100
RIGHT TERMINAL >
ATCGGGGAGGAAGAAGCCCGTGCCTTTTCCCGCGAGGTTGAAGCGGATGGAAGAGTTTCCCGAGGATGACTGCTGCTGCAATGACGTTGAGCGAAGAC 1200
GCACGTTTACCATGATGATTCCGGAAGGTGTGCGCATGCACGCTTTAACGGTGAATGTTCTGTTTCAAGGCCACCTGGGATACCAATTCGTCGCGGCTTTT 1300
CCGGACACAGTTCGGATGGTCAAGCCGAAGCGCATCAGCAACCCGAACAATACCGGCGACAGCCGGAACAGCGGTGCGGATTAATGACAGC 1400
GGTGCGGCGCTGGGATATACGTCAGCGAGGACGGGTATCCTGCTGATGCGCGAAGATGACATGGAATACCCCGTGAATACCCGCGGCGCGCTT 1500
GGCGTAATCATGGTCATAGCTGTTTCTGTGTGAATGTGTAACCGCTCAATTCACACAACATACGAGCCGGAAGCATAAGGTGAAGCTTGGGGT 1600
GCCATAAGTATGCTAACTCACTTAATTCGTTGCGCTCACTGCGCGCTTTCAGTCGGGAACCTGTGCTGCGAGCTGCATTAATGAATCGGCCAAC 1700
GCGCGGGGAGAGGCGGTTTGCCTATTGGGCGCTCTTCCGCTTCCTGCTCACTGACTGCTGCGCTCGGTGCTCGGCTGCGCGGAGCGGTATCAGCTCA 1800
CTCAAAGSCGGTAATACGTTTATCCACAGATCAGGGGATAACGAGGAAGACATGTGAGCAAAAGGCCGCAAAAGGCCAAGAACCGTAAAGAGGCC 1900
GCGTTGCTGGCGTTTTTTCATAGGCTCCGCCCCCTGACGAGCATCAAAAATTCAGCGTCAAGTCAGAGTGGCGAAACCCGACAGGACTATTAAGAT 2000
ACCGGGCGTTTCCCCCTGAGGCTCCCTGCTGCGCTCTCTGTTCGAGCCCTGCGCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAGCGTGGC 2100
GCTTCTCAGAGCTCAGCTGTAGGTACTCAGTTGCGGTGAGGTGCTTCAGCTCCCAAGCTGGGCTGTGTGACGAAACCCCGCTTCAGCCGAGCGCTGC 2200
GCCTTATCCGGTAATATCGTCTGAGTCCAAACCGGTAGACACGACTTATCGCCACTGCGCGAGCCACTGCTAACAGGATTAAGACAGCGAGGTATG 2300

```

FIG 3 (C2) cont.

2400 TAGGCGGTGCTACAGAGTTCCTGAAGTGGTGGCCTAACTACGGCTACACTAGAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGG
 2500 AAAAGAGTTGGTAGCTCTTGATCCGGCAAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTGTTGCAAGCAGCAEATLACGGCGAGAAAAAGGATCT
 2600 CAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAAACGAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCA
 <ColE1 origin
 2700 CCTAGATCCTTTTAAATTAAAAATGAAGTTTAAATCAATCTAAGTATATATGAGTAACTTGGTCTGACAGTTACCAATGCTTAAATCAGTGAGGCACC
 < AMPICILLIN RESISTANCE
 2800 TATCTCAGCGATCTGTCTATTTCTTCATCCATAGTTGCCCTGACTCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGCCCCAGTCTCT
 < AMPICILLIN RESISTANCE
 2900 GCATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGTCCTGCAACTTTAT
 < AMPICILLIN RESISTANCE
 3000 CCGCCTCCATCCAGTCTATTAATGTGTGGCGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGGCGAACGTTGTTGCCATTGCTACAGGCATCTCT
 < AMPICILLIN RESISTANCE
 3100 GGTGTCACGCTCGTCTGTTGGTATGGCTTCATTCAGCTCCGGTTCCTCAACGATCAAGGCGAGTTACATGATCCCCATGTTGTGCAAAAAGCGGTTAGC
 < AMPICILLIN RESISTANCE
 3200 TCCTTCGGTCCCTCCGATCGTTGTGTCAGAAAGTAAAGTTGGCCGCACTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCATGCCATCCG
 < AMPICILLIN RESISTANCE
 3300 TAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAAAGTGTATGCGGCACCGAGITGCTCTTGCCCGGCGCTCAATACGGGATAA
 < AMPICILLIN RESISTANCE
 3400 TACCGCGCCACATAGCAGAACTTAAAGTGCTCATCTTGGAAAACGTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCGCTGTTGAGATCCAGITCG
 < AMPICILLIN RESISTANCE
 3500 ATGTAACCCACTCGTGCAACCAACTGATCTTCAGCATCTTTACTTTACAGCGGTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCCAAAAAGG
 < AMPICILLIN RESISTANCE
 3600 GAATAAGGGCGACACGGAAATGTTGAATACTCACTCTCTCTTTTCAATATTATTGAAGCAATTATCAGGGTTATTGTCTCATGACGGATACATATT
 < AMPICILLIN RESISTANCE
 TGAATGTATTAGAAAAATAAACAATAGGGGTTCCGCGCACATTTCCCCGAAAAGTGCCAC (SEQ ID NO: 41)



Plasmid name: p32
Plasmid size: 10.34 kb

FIG. 4

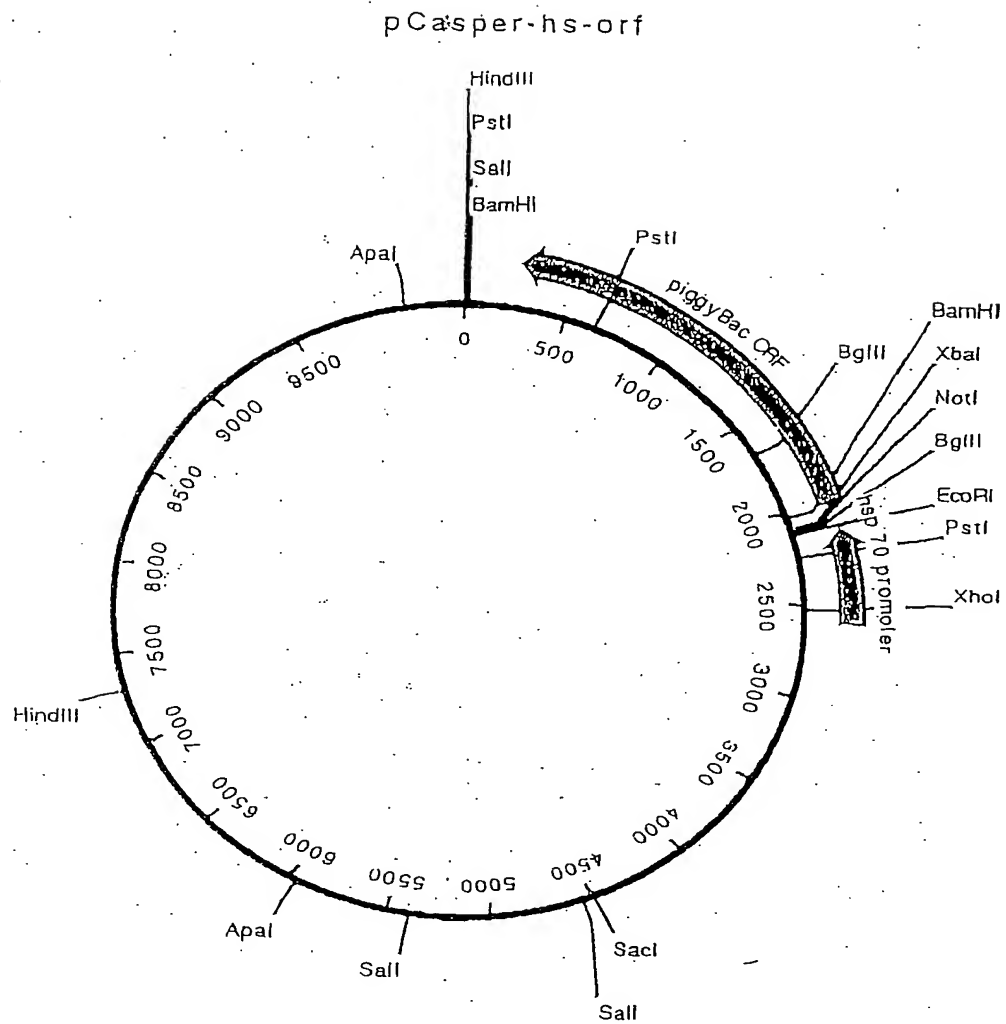


FIG. 5(A)

FIG. 22

pBSII-hs-orf

Sequence Range: 1 to 5533

100

CTAAATTGTAAGCGTTAATATTTTGTAAAATTCGCGTTAAATTTTGTAAATCAGC
TCATTTTTTAACCAATAGGCCGAAATCGGCAAATCCCTTAT

200

AAATCAAAAGAATAGACCGAGATAGGGTTGAGTGTTGTTCCAGTTTGAACAAGAG
TCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGAAAAA

300

CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCTAATCAAGTTTTTTGG
GGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCTAAAGGGAG

400

CCCCGATTTAGAGCTTGACGGGGAAAGCCGGCGAACGTGGCGAGAAAGGAAGGG
AAGAAAGCGAAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG

500

GTCACGCTGCGCGTAACCACCACACCCGCCGCGCTTAATGCGCCGCTACAGGGCGC
GTCCCATTCGCCATTCAGGCTGCGCAACTGTTGGGAAGGGCGAT

600

CGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGG
CGATTAAGTTGGGTAAACGCCAGGGTTTTCCAGTCACGACGTTG

700

TAAACGACGGCCAGTGAGCGCGCGTAATACGACTCACTATAGGGCGAATTGGGTA
CCGGGCCCCCCCCTCGAGGTCGACGGTATCGATAAGCTATCCAGT

FIG. 5(B)

800

GCAGTAAAAAATAAAAAAAAATATGTTTTTTTAAATCTACATTCTCCAAAAAAGGG
TTTTATTA ACTTACATACATACTAGAATTGATCCCCGATCCCC

900

CTAGAATCCCAAAACAAACTGGTTATTGTGGTAGGTCAATTTGTTTGCCAGAAGAAAA
CTCGAGAAATTTCTCTGGCCGTTATTCGTTATTTCTCTCTTTTC

1000

TTTTTGGGTCTCCCTCTCTGCACTAATGCTCTCTCACTCTGTACACAGTAAACGGCA
TACTGCTCTCGTTGGTTCGAGAGAGCGCGCCTCGAATGTTTCG

1100

CGAAAAGAGCGCCGGAGTATAAATAGAGCGCTTCGTCTACGGAGCGACAATTCAAT
TCAAACAAGCAAAGTGAACACGTCGCTAAGCGAAAGCTAAGCAA

1200

ATAAACAAGCGCAGCTGAACAAGCTAAACAATCTGCAGTAAAGTGCAAGTTAAAGT
GAATCAATTAAAAGTAACCAGCAACCAAGTAAATCAACTGCAAC

<hsp70_promoter

|

1300

TACTGAAATCTGCCAAGAAGTAATTATTGAATACAAGAAGAGAACTCTGAATAGGG
AATTGGGAATTCCTGCAGCCCCGGGGGATCCTATATAATAAAATG

1400

GGTAGTTCTTTAGACGATGAGCATATCCTCTCTGCTCTTCTGCAAAGCGATGACGAG
CTTGTTGGTGAGGATTCTGACAGTGAAATATCAGATCACGTAA

1500

FIG. 5(B)

GTGAAGATGACGTCCAGAGCGATACAGAAGAAGCGTTTATAGATGAGGTACATGAA
GTGCAGCCAACGTCAAGCGGTAGTGAAATATTAGACGAACAAAA

1600

TGTTATTGAACAACCAGGTTCTTCATTGGCTTCTAACAGAATCTTGACCTTGCCACAG
AGGACTATTAGAGGTAAGAATAAACATTGTTGGTCAACTTCA

1700

AAGTCCACGAGGCGTAGCCGAGTCTCTGCACTGAACATTGTCAGATCTCAAAGAGG
TCCGACGCGTATGTGCCGCAATATATATGACCCACTTTTATGCT

1800

TCAAAC TATTTTTT ACTGATGAGATAATTT CGGAAATTGTAAAATGGACAAATGCTG
AGATATCATTGAAACGTCGGGAATCTATGACAGGTGCTACATT

1900

TCGTGACACGAATGAAGATGAAATCTATGCTTTCTTTGGTATTCTGGTAATGACAGC
AGTGAGAAAAGATAACCACATGTCCACAGATGACCTCTTTGAT

2000

CGATCTTTGTCAATGGTGTACGTCTCTGTAATGAGTCGTGATCGTTTTGATTTTTTGA
TACGATGTCTTAGAATGGATGACAAAAGTATACGGCCACAC

2100

TTCGAGAAAACGATGTATTTACTCCTGTTAGAAAAATATGGGATCTCTTTATCCATC
AGTGCATACAAAATTACACTCCAGGGGCTCATTTGACCATAGA

2200

TGAACAGTTACTTGGTTTTAGAGGACGGTGTCCGTTTAGGATGTATATCCCAAACAA
GCCAAGTAAGTATGGAATAAAAATCCTCATGATGTGTGACAGT

FIG. 5(B)

2300

GGTACGAAGTATATGATAAATGGAATGCCTTATTTGGGAAGAGGAACACAGACCAA
CGGAGTACCACTCGGTGAATACTACGTGAAGGAGTTATCAAAGC

2400

CTGTGCACGGTAGTTGTCGTAATATTACGTGTGACAATTGGTTTACCTCAATCCCTTT
GGCAAAAACTTACTACAAGAACCGTATAAGTTAACCATTGT

2500

GGGAACCGTGCGATCAAACAAACGCGAGATACCGGAAGTACTGAAAAACAGTCGCT
CCAGGCCAGTGGGAACATCGATGTTTTGTTTTGACGGACCCCTT

2600

ACTCTCGTCTCATATAAACCGAAGCCAGCTAAGATGGTATACTTATTATCATCTTGT
GATGAGGATGCTTCTATCAACGAAAGTACCGGTAAACCGCAA

2700

TGGTTATGTATTATAATCAAACCTAAAGGCGGAGTGGACACGCTAGACCAAATGTGTT
CTGTGATGACCTGCAGTAGGAAGACGAATAGGTGGCCTATGGC

2800

ATTATTGTACGGAATGATAAACATTGCCTGCATAAATTCTTTTATTATATACAGCCAT
AATGTCAGTAGCAAGGGAGAAAAAGGTTCAAAGTCGCAAAAA

2900

TTTATGAGAAACCTTTACATGAGCCTGACGTCATCGTTTATGCGTAAGCGTTTAGAA
GCTCCTACTTTGAAGAGATATTTGCGCGATAATATCTCTAATA

3000

TTTTGCCAAATGAAGTGCCTGGTACATCAGATGACAGTACTGAAGAGCCAGTAATGA

FIG. 5(B)

AAAAACGTACTTACTGTACTTACTGCCCTCTAAAATAAGGCG

3100

AAAGGCAAATGCATCGTGCAAAAAATGCAAAAAAGTTATTTGTGAGAGCATAATA
TTGATATGTGCCAAAGTTGTTTCTGACTGACTAATAAGTATAAT

3200

TTGTTTCTATTATGTATAAGTTAAGCTAATTACTTATTTTATAATAACATGACTGT
TTTTAAAGTACAAAATAAGTTTATTTTTGTAAAAGAGAGAAT

3300

GTTTAAAAGTTTTGTTACTTTAGAAGAAATTTTGAGTTTTTGTTTTTTTTTAATAAATA
AATAAACATAAATAAATTGTTTGTTGAATTTGGATCCACTA

3400

GTTCTAGAGCGGCCGCCACCGCGGTGGAGCTCCAGCTTTTGTTCCCTTTAGTGAGGG
TTAATTGCGCGCTTGGCGTAATCATGGTCATAGCTGTTTCCTG

3500

TGTGAAATTGTTATCCGCTCACAATTCCACACAACATACGAGCCGGAAGCATAAAGT
GTAAAGCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAAT

3600

TGCGTTGCGCTCACTGCCCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTA
ATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTGCGTATTGGG

3700

CGCTCTTCGCTTCCTCGCTCACTGACTCGCTGCGCTCGGTCGTTCCGGCTGCGGCGAG
CGGTATCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAG

3800

FIG. 5(B)

AATCAGGGGATAACGCAGGAAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAG
GAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCG

3900

CCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGA
CAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTC

4000

GTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTT
CGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATC

4100

TCAGTTCGGTGTAGGTCGTTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTC
AGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTC

4200

CAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTA
GCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGG

4300

TGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAG
CCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCA

4400

AACAAACCACCGCTGGTAGCGGTGGTTTTTTTTGTTTGCAAGCAGCAGATTACGCGCA
GAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGG

4500

GTCTGACGCTCAGTGGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGAGATTATC
AAAAAGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGT

FIG. 5(B)

<ColE1_origin

4600

TTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTA
ATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCGTTTCAT

RESISTANCE_____>_____AMPCILLIN

4700

CCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCAT
CTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACC

RESISTANCE_____>_____AMPCILLIN

4800

GGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTG
GTCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGC

RESISTANCE_____>_____AMPCILLIN

4900

CGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTTGCCATT
GCTACAGGCATCGTGGTGTACGCTCGTCGTTTGGTATGGCTT

RESISTANCE_____>_____AMPCILLIN

5000

CATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCA
AAAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAG

RESISTANCE_____>_____AMPCILLIN

5100

FIG. 5(B)

TAAGTTGGCCGCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACT
GTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTAC

_____AMPCILLIN
RESISTANCE_____>

5200

TCAACCAAGTCATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCG
TCAATACGGGATAATACCGCGCCACATAGCAGAACTTTAAAAG

_____AMPCILLIN
RESISTANCE_____>

5300

TGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCGCTGT
TGAGATCCAGTTCGATGTAACCCACTCGTGACCCCAACTGATC

_____AMPCILLIN
RESISTANCE_____>

5400

TTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAA
TGCCGCAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATA

_____AMPCILLIN
RESISTANCE_____>

5500

CTCATACTCTTCCTTTTTCAATATTATTGAAGCATTATCAGGGTTATTGTCTCATGA
GCGGATACATATTTGAATGTATTTAGAAAAATAAACAATAG

_____>
GGGTTCCGCGCACATTTCCCCGAAAAGTGCCAC (SEQ ID NO: 42)

FIG. 5(B)

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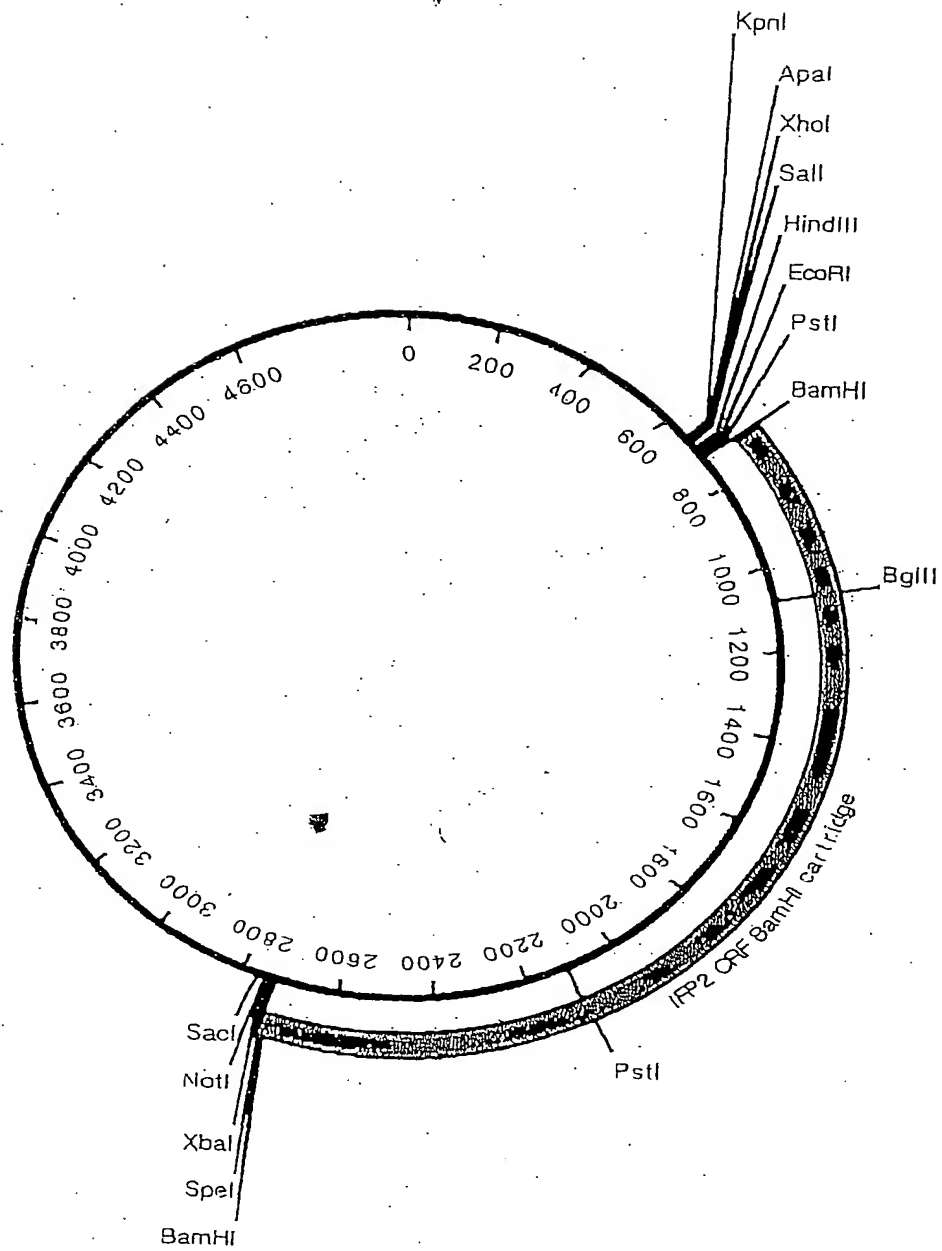


FIG. 6(A)

Sequence Range: 1 to 4971

100

CTAAATTGTAAGCGTTAATATTTTGTAAAATTCGCGTTAAATTTTGTAAATCAGC
TCATTTTAAACCAATAGGCCGAAATCGGCAAATCCCTTAT

200

AAATCAAAAGAATAGACCGAGATAGGGTTGAGTGTTGTTCCAGTTTGGAAACAAGAG
TCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGAAAAA

300

CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCTAATCAAGTTTTTTGG
GGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCTAAAGGGAG

400

CCCCGATTTAGAGCTTGACGGGGAAAGCCGGCGAACGTGGCGAGAAAGGAAGGG
AAGAAAGCGAAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG

500

GTCACGCTGCGCGTAACCAACACACCCGCCGCGCTTAATGCGCCGCTACAGGGCGC
GTCCCATTCGCCATTCAGGCTGCGCAACTGTTGGGAAGGGCGAT

600

CGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGG
CGATTAAGTTGGGTAACGCCAGGGTTTTCCAGTCACGACGTTG

700

TAAAACGACGGCCAGTGAGCGCGCGTAATACGACTCACTATAGGGCGAATTGGGTA
CCGGGCCCCCCTCGAGGTGACGGTATCGATAAGCTTGATATC

FIG. 6(B)

800

GAATTCCTGCAGCCCGGGGATCCTATATAATAAAATGGGTAGTTCTTTAGACGATG
AGCATATCCTCTCTGCTCTTCTGCAAAGCGATGACGAGCTTGT

900

TGGTGAGGATTCTGACAGTGAAATATCAGATCACGTAAGTGAAGATGACGTCCAGA
GCGATACAGAAGAAGCGTTTATAGATGAGGTACATGAAGTGCAG

1000

CCAACGTCAAGCGGTAGTGAAATATTAGACGAACAAAATGTTATTGAACAACCAGG
TTCTTCATTGGCTTCTAACAGAATCTTGACCTTGCCACAGAGGA

1100

CTATTAGAGGTAAGAATAAACATTGTTGGTCAACTTCAAAGTCCACGAGGCGTAGCC
GAGTCTCTGCACTGAACATTGTCAGATCTCAAAGAGGTCCGAC

1200

GCGTATGTGCCGCAATATATATGACCCACTTTTATGCTTCAAACCTATTTTTTACTGAT
GAGATAATTTTCGGAAATTGTAAAATGGACAAATGCTGAGATA

1300

TCATTGAAACGTCGGGAATCTATGACAGGTGCTACATTTTCGTGACACGAATGAAGAT
GAAATCTATGCTTTCTTTGGTATTCTGGTAATGACAGCAGTGA

1400

GAAAAGATAACCACATGTCCACAGATGACCTCTTTGATCGATCTTTGTCAATGGTGT
ACGTCTCTGTAAATGAGTCGTGATCGTTTTGATTTTTTGATACG

1500

ATGTCTTAGAATGGATGACAAAAGTATACGGCCCACTTCGAGAAAACGATGTATT

FIG. 6(B)

TACTCCTGTTAGAAAAATATGGGATCTCTTTATCCATCAGTGC

1600

ATACAAAATTACACTCCAGGGGCTCATTTGACCATAGATGAACAGTTACTTGGTTTT
AGAGGACGGTGTCCGTTTAGGATGTATATCCCAAACAAGCCAA

1700

GTAAGTATGGAATAAAAAATCCTCATGATGTGTGACAGTGGTACGAAGTATATGATA
AATGGAATGCCTTATTTGGGAAGAGGAACACAGACCAACGGAGT

1800

ACCACTCGGTGAATACTACGTGAAGGAGTTATCAAAGCCTGTGCACGGTAGTTGTCG
TAATATTACGTGTGACAATTGGTTCACCTCAATCCCTTTGGCA

1900

AAAAACTTACTACAAGAACCGTATAAGTTAACCATTGTGGGAACCGTGCGATCAAA
CAAACGCGAGATACCGGAAGTACTGAAAAACAGTCGCTCCAGGC

2000

CAGTGGGAACATCGATGTTTTGTTTTGACGGACCCCTTACTCTCGTCTCATATAAACC
GAAGCCAGCTAAGATGGTATACTTATTATCATCTTGTGATGA

2100

GGATGCTTCTATCAACGAAAGTACCGGTAAACCGCAAATGGTTATGTATTATAATCA
AACTAAAGGCGGAGTGGACACGCTAGACCAAATGTGTTCTGTG

2200

ATGACCTGCAGTAGGAAGACGAATAGGTGGCCTATGGCATTATTGTACGGAATGAT
AAACATTGCCTGCATAAATTCTTTTATTATATACAGCCATAATG

2300

FIG. 6(B)

TCAGTAGCAAGGGAGAGAAAAGGTTCAAAGTCGCAAAAAATTTATGAGAAACCTTTAC
ATGAGCCTGACGTCATCGTTTATGCGTAAGCGTTTAGAAGCTCC

2400

TACTTTGAAGAGATATTTGCGCGATAATATCTCTAATATTTTGCCAAATGAAGTGCCT
GGTACATCAGATGACAGTACTGAAGAGCCAGTAATGAAAAAA

2500

CGTACTTACTGTACTTACTGCCCCCTCTAAAATAAGGCGAAAGGCCAAATGCATCGTGC
AAAAAATGCAAAAAAGTTATTTGTCTGAGAGCATAATATTGATA

2600

TGTGCCAAAGTTGTTTCTGACTGACTAATAAGTATAATTTGTTTCTATTATGTATAAG
TTAAGCTAATTACTTATTTTATAACAACATGACTGTTTTT

2700

AAAGTACAAAATAAGTTTATTTTTGTAAAAGAGAGAATGTTTAAAAGTTTTGTTACT
TTAGAAGAAATTTTGAGTTTTTGTTTTTTTTAAATAAATAAAT

2800

AAACATAAATAAATTGTTTGTGAATTTGGATCCACTAGTTCTAGAGCGGCCGCCAC
CGCGGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAGGGTTAAT

2900

TGCGCGCTTGCGGTAATCATGGTCATAGCTGTTTCCTGTGTGAAATTGTTATCCGCTC
ACAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTA

3000

GCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCC
GCTTTCAGTCGGGAAACCTGTCTGCGCAGCTGCATTAATGAA

FIG. 6(B)

>ColE1_origin

3100

TCGGCCAACGCGCGGGGAGAGGCGGTTTGCCTATTGGGCGCTCTTCCGCTTCCTCGC
TCACTGACTCGCTGCGCTCGGTCGTTCCGGCTGCGGCGAGCGGT

3200

ATCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAG
GAAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGT

3300

AAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCAC
AAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGAC

3400

TATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGA
CCCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGG

3500

AAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGT
TCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCC

3600

GACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGAC
TTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAG

3700

CGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACA
CTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGT

3800

FIG. 6(B)

TACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTA
GCGGTGGTTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAA

3900

AAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAAC
GAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAA

4000

GGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTTAAATCAATCTAAAGTA
TATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAG

4100

TGAGGCACCTATCTCAGCGATCTGTCTATTTTCGTTTCATCCATAGTTGCCTGACTCCCC
GTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGC

RESISTANCE _____ AMPCILLIN _____>

4200

CCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCA
ATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCTG

RESISTANCE _____ AMPCILLIN _____>

4300

CAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTA
GTTGCCAGTTAATAGTTTGCGCAACGTTGTTGCCATTGCTAC

RESISTANCE _____ AMPCILLIN _____>

4400

FIG. 6(B)

AGGCATCGTGGTGTACGCTCGTCGTTTGGTATGGCTTCATTCAGCTCCGGTTCCCAA
CGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAA

RESISTANCE _____AMPCILLIN>

4500

GCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCAGTGTTA
TCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCA

RESISTANCE _____AMPCILLIN>

4600

TGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAG
AATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAAT

RESISTANCE _____AMPCILLIN>

4700

ACGGGATAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATTGGAAAAC
GTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCGCTGTTGAGA

RESISTANCE _____AMPCILLIN>

4800

TCCAGTTCGATGTAACCCACTCGTGACCCAACTGATCTTCAGCATCTTTTACTTTCA
CCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCG

RESISTANCE _____AMPCILLIN>

4900

CAAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTTTC
AATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGG

FIG. 6(B)

_____AMPCILLIN RESISTANCE_____>

ATACATATTTGAATGTATTTAGAAAAATAAACAAATAGGGGTTCGCGCACATTTC
CCGAAAAGTGCCAC (SEQ ID NO: 43)

FIG. 6(B)

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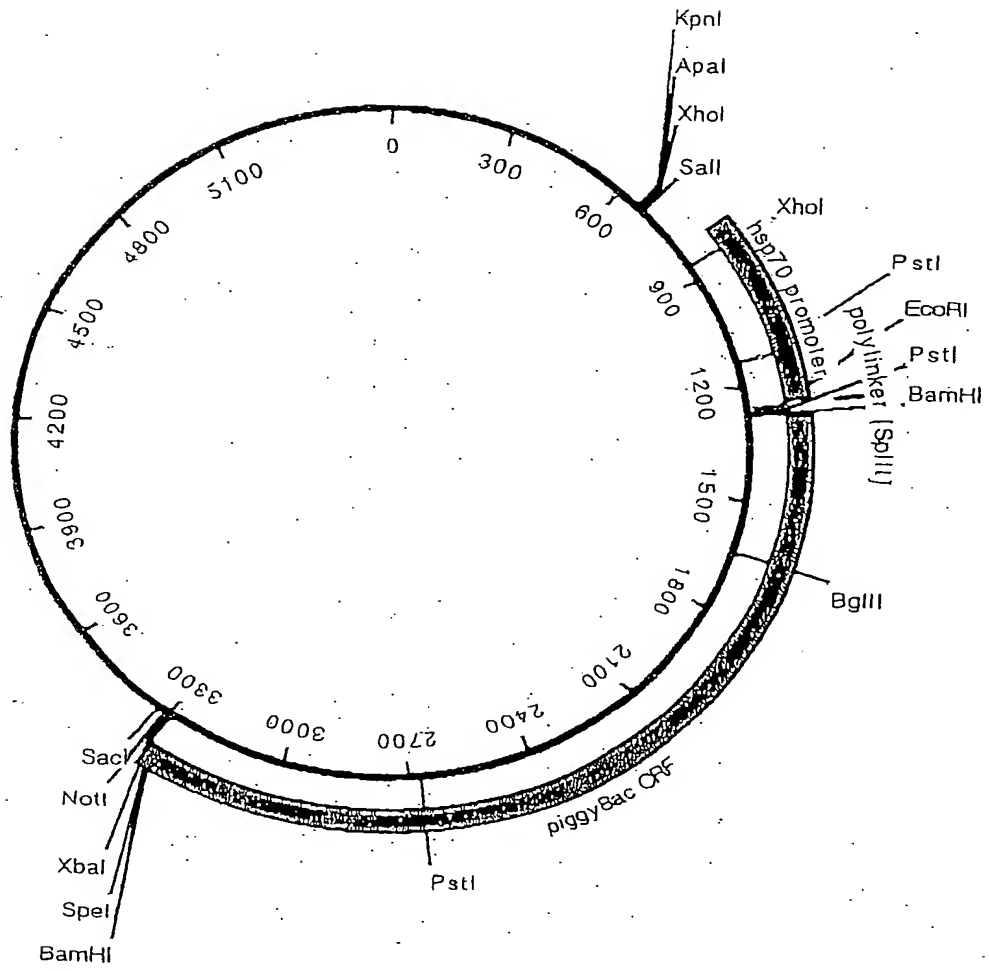


FIG. 7(A)

Fig 7(B) cont.

2500
 GGGAACCGTGGCATCAAACAAACGCGAGATACCGGAGTACTGAAAAACAGTCGCTCCAGGCCAGTGGGAACATCGATGTTTTGTTTTGACGGACCCCTT
 2600
 ACTCTCCTCTCATATAAACCGAAGCCAGCTAAGATGGTATACTEATTTATCATCTTGTGATGAGGATGCTTCTATCAACGAAGTACCGGTAACCGCAAA
 2700
 TGGTTAIGTATTATAATCAAACATAAGGCGGAGTGGACACGCTAGACCAATGTGTTCTGTGATGACCTGCASTAGGAAGACCAATAGGTGGCCATGGC
 2800
 ATTATGTACGGAATGATAAACATTGCTGCAATAATCTTTTATTATATACAGCCATAATGTGATGACCAAGGAGAAAAGGTTCAAAGTCGCAAAAA
 2900
 TTTATGAGAAACCTTTACATGAGCCTGACGTGATCTGTTATGCTGAGCGTTTGAAGCTCTTACTTTGAAGAGATATTGCGCGATAATATCTCTAATA
 3000
 TTTTGCCAAATGAATGCGCTGGTACATCAGATGACAGTACTGAGAGGCCATGTAATGAAAAACGTACTTACTTACTTACTGCCCCCTGAAAAAAGGCG
 3100
 AAAGGCAATGATCGTGCAAAAATGCAAAAAATTAATTTGTGAGAGCATAATATTGATGCTCCAAAGTTGTTTCTGACTGACTAATAAGTATAAT
 3200
 TTGTTTCTATTATGATAGTTAAGCTAATTACTTATTTTATAATACACATGACTGTTTTTAAAGTACAAAATAAGTTTATTTTGTAAAGAGAGAAAT
 3300
 GTTAAAAAGTTTGTACTTTAGAGAAATTTGAGTTTGTGTTTTTTTAAATAAATAAATAAATAAATAAATTGTTTGTGAATTGAGATCCACTA
 3400
 GTTCTAGAGCGGCGCCACCGCGGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAAGGTTAATGCGCGCTTGGCGTAATCATGTCATAGCTGTTTCCTG
 3500
 TGTGAATTTGTTATCCGCTCACAATTCACACACATACGAGCGCGAGCAAAAGTGAAAGCCTGGGGTGCTTAATGAGTGAGCTAATCACAATTAAT
 3600
 TGCGTTGCGCTCACTGCCCCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTATGATGCGCCAAAGCGCGGAGAGGCGGTTTGGCTAATGGG
 3700
 CGCTCTTCGCTTCCTGCTCACTGACTCGCTCGCTCGGTCGTTGCTGCGCTGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAG
 3800
 AATCAGGGGATAACGCGAGGAAGACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAGGCGCGGTTGCTGCGCTTTTTCATAGGCTCCG
 3900
 CCCCCCTGACGAGCATCACAAAAATCGAGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAGATACAGGCGGTTTCCCTCGGAGCTCCCTC
 4000
 GTGCGCTCTCTGTTCCGACCTGCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGCGGCTTTCTCATAGCTCAGGCTGTAGGTATC
 4100
 TCAGTTCCGGTGTAGGTGTTGCTCCAGCTGGGCTGTGTGACGAACCCCCGTTAGCCCCGACCGCTGCGGCTTATCCGGTAATATCGTCTTGATTC
 4200
 CAACCCGGTAAGACACGACTTATCGGCACTGGCAGCAGCCACTGCTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTCTACAGAGTTCTTGAAGTGG
 4300
 TGCGCTAATCAGGCTACACTAGAAGGACAGTATTGGTAICTGGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCA
 4400
 AACAAACACCGCTGGTAGCGGTGTTTTTTTGTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAGATCTTTTGATCTTTTCTACGGG
 4500
 GTCTGACGCTCAGTGGAACGAAAACCTACGTTAAGGGATTTTGGTCATGAGATTATCAAAAGGATCTTCACTAGATCCTTTTAAATTAATAATGAAT

 <ColE1 origin
 |
 TTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTGCTTCAT
 _____ AMPICILLIN RESISTANCE _____>
 4600
 CCATAGTTGCTGACTCCCCCTCGTGTAGATTAATACGATACGGAGGGGCTTACCATCTGCCCCAGTGTGCAATGATACCGGAGACCCACGCTCACC
 _____ AMPICILLIN RESISTANCE _____>
 4700
 GGCTCCAGATTATCAGCAATAAACGAGCCGAGGGGCGAGGCGCAGAGTGGTCTTGCACCTTTATCGGCTCCAGCGAGTCTATTAATGTTGTC
 _____ AMPICILLIN RESISTANCE _____>
 4800

FIG. 7(B) cont.

CGGGAAGCTAGAGTAAGTAATTCCGCCAGTTAATAGTTTGCSCAACGTTGTTGCCAATTGCTACAGGCATGTTGGTGTACGCTCGTCTGTTTGGTATGGCTT 4900

AMPCILLIN RESISTANCE _____>

CATTAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCCTCGGATCGTTGTCAGAAG --5000

AMPCILLIN RESISTANCE _____>

TAAGTGGCCGCGAGTGTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTACTGTTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTAC 5100

AMPCILLIN RESISTANCE _____>

TGACCAAGTCATTCTGAGATAGTGTATGCGGCGACCGAGTTGCTTTGCCCCGGCTCAATACGGGATATACCGCGCCACATAGCAGAACTTTAAAAG 5200

AMPCILLIN RESISTANCE _____>

TGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACCTCTCAGGATCTTACCGCTGTTGAGATCCAGTTTCGATCTAACCCACTCTGTGCACCCCACTGATC 5300

AMPCILLIN RESISTANCE _____>

TTCAGCATCTTTTACTTTCACCAGCGTTCTTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATA 5400

AMPCILLIN RESISTANCE _____>

CTCACTCTCTTCTTTTCAATATATTGAAGCAITTAATCAGGGTTATTGTCTCATGAGCGGATACATATTGAAIGTATTAGAAAAATAACAATAG 5500

GGGTTCCGCGCACATTTCCCCGAAAAGTCCAC (SEQ ID NO: 42)

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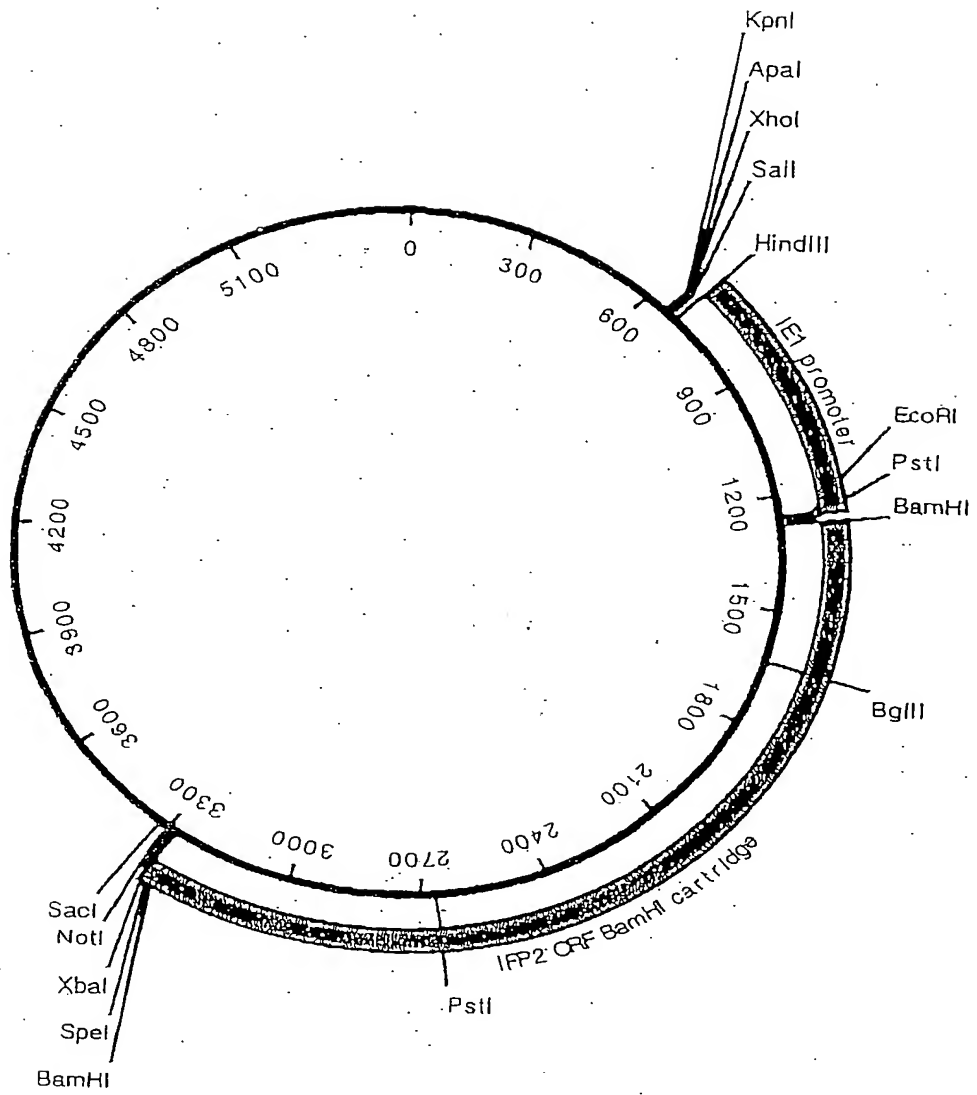


FIG. 8(A)

Sequence Range: 1 to 5523

100

CTAAATTGTAAGCGTTAATATTTTGTAAATTCGCGTTAAATTTTGTAAATCAGC
TCATTTTAAACCAATAGGCCGAAATCGGCAAAATCCCTTAT

200

AAATCAAAAGAATAGACCGAGATAGGGTTGAGTGTGTTCCAGTTTGAACAAGAG
TCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGAAAAA

300

CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCTAATCAAGTTTTTTGG
GGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCTAAAGGGAG

400

CCCCGATTTAGAGCTTGACGGGGAAAGCCGGCGAACGTGGCGAGAAAGGAAGGG
AAGAAAGCGAAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG

500

GTCACGCTGCGCGTAACCACCACACCCGCCGCGCTTAATGCGCCGCTACAGGGCGC
GTCCCATTCGCCATTCAGGCTGCGCAACTGTTGGGAAGGGCGAT

600

CGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGG
CGATTAAGTTGGGTAAACGCCAGGGTTTTCCAGTCACGACGTTG

700

TAAACGACGGCCAGTGAGCGCGCGTAATACGACTCACTATAGGGCGAATTGGGTA
CCGGGCCCCCCTCGAGGTGACGGTATCGATAAGCTTCGATGT

FIG. 8(B)

800

CTTTGTGATGCGCCGACATTTTTGTAGGTTATTGATAAAATGAACGGATACAGTTGC
CCGACATTATCATTAAATCCTTGGCGTAGAATTTGTCGGGTCC

900

ATTGTCCGTGTGCGCTAGCATGCCCCGCTAACGGACCTCGTACTTTTGGCTTCAAAGG
TTTTGCGCACAGACAAAATGTGCCACACTTGCAGCTCTGCATG

1000

TGTGCGCGTTACCACAAATCCCAACGGCGCAGTGTACTTGTGTATGCAAATAAATC
TCGATAAAGGCGCGGCGCGCGAATGCAGCTGATCACGTACGCT

1100

CCTCGTGTTCGGTTCAAGGACGGTGTATCGACCTCAGATTAATGTTTATCGGCCGA
CTGTTTTCTGATCCGCTCACCAAACGCGTTTTTGCATTAACAT

1200

TGTATGTCGGCGGATGTTCTATATCTAATTTGAATAAAATAAACGATAACCGCGTTGG
TTTTAGAGGGCATAATAAAAGAAATATTGTTATCGTGTTCGCC

1300

ATTAGGGCAGTATAAATTGACGTTTCATGTTGGATATTGTTTCAGTTGCAAGTGAATT
CCTGCAGCCCGGGGGATCCTATATAATAAAATGGGTAGTTCTT

1400

TAGACGATGAGCATATCCTCTCTGCTCTTCTGCAAAGCGATGACGAGCTTGTTGGTG
AGGATTCTGACAGTGAAATATCAGATCAGTAAGTGAAGATGA

1500

CGTCCAGAGCGATACAGAAGAAGCGTTTATAGATGAGGTACATGAAGTGCAGCCAA

FIG. 8(B)

CGTCAAGCGGTAGTGAAATATTAGACGAACAAAATGTTATTGAA

1600

CAACCAGGTTCTTCATTGGCTTCTAACAGAATCTTGACCTTGCCACAGAGGACTATT
AGAGGTAAGAATAAACATTGTTGGTCAACTTCAAAGTCCACGA

1700

GGCGTAGCCGAGTCTCTGCACTGAACATTGTCAGATCTCAAAGAGGTCCGACGCGTA
TGTGCCGCAATATATATGACCCACTTTTATGCTTCAAACCTATT

1800

TTTTACTGATGAGATAATTTTCGGAAATTGTAAAATGGACAAATGCTGAGATATCATT
GAAACGTCGGGAATCTATGACAGGTGCTACATTTCTGTGACACG

1900

AATGAAGATGAAATCTATGCTTTCTTTGGTATTCTGGTAATGACAGCAGTGAGAAAA
GATAACCACATGTCCACAGATGACCTCTTTGATCGATCTTTGT

2000

CAATGGTGTACGTCTCTGTAATGAGTCGTGATCGTTTTGATTTTTTGATACGATGTCT
TAGAATGGATGACAAAAGTATACGGCCACACTTCGAGAAAA

2100

CGATGTATTTACTCCTGTTAGAAAAATATGGGATCTCTTTATCCATCAGTGCATACA
AAATTACACTCCAGGGGCTCATTTGACCATAGATGAACAGTTA

2200

CTTGGTTTTAGAGGACGGTGTECGTTTAGGATGTATATCCCAAACAAGCCAAGTAAG
TATGGAATAAAAATCCTCATGATGTGTGACAGTGGTACGAAGT

2300

FIG. 8(B)

ATATGATAAATGGAATGCCTTATTTGGGAAGAGGAACACAGACCAACGGAGTACCA
CTCGGTGAATACTACGTGAAGGAGTTATCAAAGCCTGTGCACGG

2400

TAGTTGTCGTAATATTACGTGTGACAATTGGTTCACCTCAATCCCTTTGGCAAAAAA
CTTACTACAAGAACCGTATAAGTTAACCATTGTGGGAACCGTG

2500

CGATCAAACAAACGCGAGATACCGGAAGTACTGAAAAACAGTCGCTCCAGGCCAGT
GGGAACATCGATGTTTTGTTTTGACGGACCCCTTACTCTCGTCT

2600

CATATAAACCGAAGCCAGCTAAGATGGTATACTTATTATCATCTTGTGATGAGGATG
CTTCTATCAACGAAAGTACCGGTAAACCGCAAATGGTTATGTA

2700

TTATAATCAAACCTAAAGGCGGAGTGGACACGCTAGACCAAATGTGTTCTGTGATGAC
CTGCAGTAGGAAGACGAATAGGTGGCCTATGGCATTATTGTAC

2800

GGAATGATAAACATTGCCTGCATAAATTCTTTTATTATATACAGCCATAATGTCAGT
AGCAAGGGAGAAAAGGTTCAAAGTCGCAAAAAATTTATGAGAA

2900

ACCTTTACATGAGCCTGACGTCATCGTTTATGCGTAAGCGTTTAGAAGCTCCTACTTT
GAAGAGATATTTGCGCGATAATATCTCTAATATTTTGCCAAA

3000

TGAAGTGCCTGGTACATCAGATGACAGTACTGAAGAGCCAGTAATGAAAAAACGTA
CTTACTGTACTTACTGCCCCCTCTAAAATAAGGCGAAAGGCAAAT

FIG. 8(B)

3100

GCATCGTGCAAAAATGCAAAAAGTTATTTGTCGAGAGCATAATATTGATATGTGC
CAAAGTTGTTTCTGACTGACTAATAAGTATAATTTGTTTCTAT

3200

TATGTATAAGTTAAGCTAATTACTTATTTTATAATACAACATGACTGTTTTTAAAGTA
CAAATAAGTTTATTTTTGTAAAAGAGAGAATGTTTAAAAGT

3300

TTTGTTACTTTAGAAGAAATTTTGAGTTTTTGTTTTTTTTTAATAAATAAATAAACAT
AAATAAATTGTTTGTTGAATTTGGATCCACTAGTTCTAGAGC

3400

GGCCGCCACCGCGGTGGAGCTCCAGCTTTTGTTCCCTTTAGTGAGGGTTAATTGCGC
GCTTGGCGTAATCATGGTCATAGCTGTTTCCTGTGTGAAATTG

3500

TTATCCGCTCACAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCT
GGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGC

>ColE1_origin

3600

TCACTGCCCCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGC
CAACGCGCGGGGAGAGGCGGTTTGCGTATTGGGCGCTCTTCCG

3700

CTTCCTCGETCACTGACTCGCTGCGCTCGGTCGTTCCGGCTGCGGCGAGCGGTATCAG
CTCACTCAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGA

3800

FIG. 8(B)

TAACGCAGGAAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAA
AAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGAC

3900

GAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATA
AAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTC

4000

CTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGT
GGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGT

4100

GTAGGTCGTTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTTCAGCCCGACCG
CTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTA

4200

AGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAG
GTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACT

4300

ACGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCT
TCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCAC

4400

CGCTGGTAGCGGTGGTTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGG
ATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCT

4500

CAGTGGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGAT
CTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTTAAATCAA

FIG. 8(B)

4600

TCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGG
CACCTATCTCAGCGATCTGTCTATTTTCGTTTCATCCATAGTTGC

RESISTANCE_____AMPCILLIN
_____>

4700

CTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAG
TGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGAT

RESISTANCE_____AMPCILLIN
_____>

4800

TTATCAGCAATAAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAAC
TTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGAAGCTA

RESISTANCE_____AMPCILLIN
_____>

4900

GAGTAAGTAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTTGCCATTGCTACAGGCA
TCGTGGTGTACGCTCGTCGTTTGGTATGGCTTCATTTCAGCTC

RESISTANCE_____AMPCILLIN
_____>

5000

CGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGGT
TAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCC

RESISTANCE_____AMPCILLIN
_____>

5100

GCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCATGCCAT

FIG. 8(B)

CCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGT
_____AMPCILLIN

RESISTANCE_____>

5200

CATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCCGGCGTCAATACGGG
ATAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCAT

_____AMPCILLIN

RESISTANCE_____>

5300

TGGAAAACGTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCGCTGTTGAGATCCAG
TTCGATGTAACCCACTCGTGCACCCAACCTGATCTTCAGCATCT

_____AMPCILLIN

RESISTANCE_____>

5400

TTTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAA
AAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCT

_____AMPCILLIN

RESISTANCE_____>

5500

TCCTTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACAT
ATTGAATGTATTTAGAAAAATAAACAAATAGGGGTTCCGCG

CACATTTCCCCGAAAAGTGCCAC (SEQ ID NO: 44)

FIG. 8(B)

p3xP3-DsRed-orf

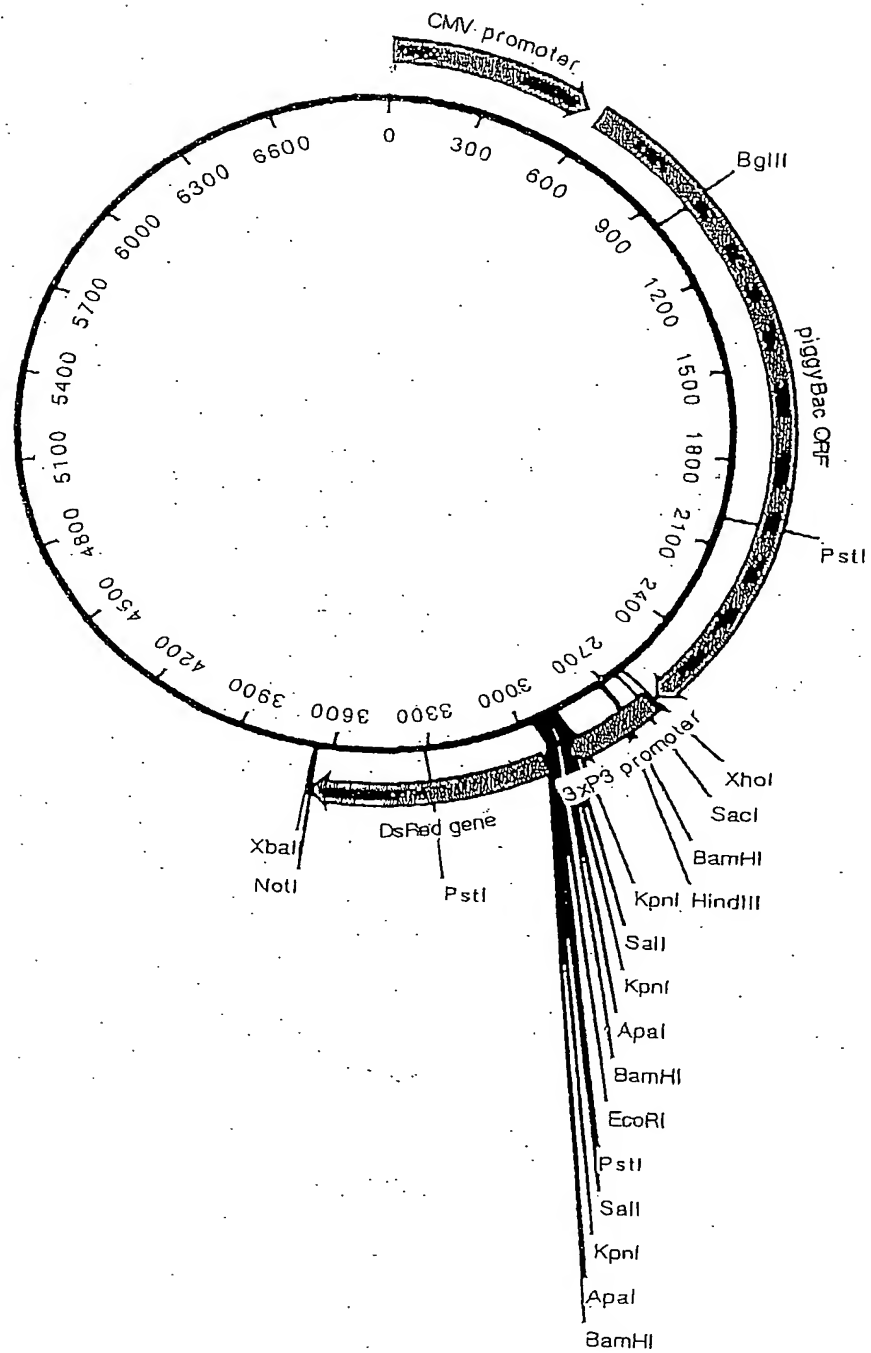


FIG. 9(A)

100
TAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCTAGAGCCCATATATGGAGTTCCCGGTTACATAACTTACGGTAATGGCCCGCCTGGCTGACCG
CMV PROMOTER

200
CCCAACGACCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCATTGACGTCAATGGGTGGAGTATTACGGT
CMV PROMOTER

300
AAACTGCCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAATGGCCCGCCTGGCATTTATGCCCAGTA
CMV PROMOTER

400
CATGACCTTATGGGACTTTCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGTATGGGTTTTGGCAGTACATCAATGGCGGTGGA
CMV PROMOTER

500
TAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCCATTTGACGTCAATGGGAGTTTGTGTTTGGCACCAAAATCAACGGGACTTTCCAAAATGTCGTA
CMV PROMOTER

600
ACAACTCCGCCCCATTGACGCAATGGCGGTAGGCGTGTACGGTGGGAGGTCTATATAAGCAGAGCTGGTTTTAGTGAACCGTCAGATCCGCTAGCGCTA
CMV PROMOTER

700
CCGGAATCAGATCTATATAATAAATGGGTAGTTCTTTAGACGATGACATATCTCTCTGCTCTTCTGCAAGCGATGACGAGCTTGTGGTGAGGAT
PIGGYBAC ORF

800
TCTGACAGTGAATATCAGATCAGCTAAGTGAAGATGACGTCACAGCGATACAGAAGAGCGTTTATAGATGAGGTACATGAAGTGACGCCAAGCTCAA
PIGGYBAC ORF

900
GCGGTAGTGAATATTAGACGAACAAATGTTTATTGAACAACCGGTTCTTCAATGGCTTCTAACAGAACTTTGACCTTGCCACAGAGGACTATTAGAGG
PIGGYBAC ORF

1000
TAAGATAAAACATTGTTGGTCAACTTCAAAGTCCACGAGGCGTAGCCGAGTCTCTGCACTGAACATTGTCAAGATCTCAAGAGGTCGACCGCTATGTGC
PIGGYBAC ORF

1100
CGCAATATATATGACCCACTTTTATGCTTCAAACATTTTTTACTGATGAGATAATTTGGAATTTGTAATGGACAAATGCTGAGATATCATTGAAC
PIGGYBAC ORF

1200
GTGCGGAATCTATGACAGGTGCTACATTTCTGACACGATGAAGATGAATCTATGCTTTCTTTGGTATCTGGTAATGACAGCACTGAGAAAAGATAA
PIGGYBAC ORF

1300
CCACATGTCACAGATGACCTCTTTGATCGATCTTTGTCAATGGGTACGTCCTGTATGAGTCTGTGATCGTTTTGATTTTTTGATACGATGCTCTAGA
PIGGYBAC ORF

1400
ATGGATGACAAAAGTATACGCCCCACACTTTCGAGAAAACGATGATTTACTCTCTGTAGAAAAATATGGGATCTCTTTATCCATCAGTGATACAAAATT
PIGGYBAC ORF

1500
ACACTCCAGGGGCTCATTGACCATAGATGAACAGTTACTTGGTTTTAGAGGACGGTGTCCGTTTAGGATGTATATCCCAAACAAGCCAAGTAAGTATGG
PIGGYBAC ORF

1600
AATAAAAATCTCATGATGTGTGACAGTGGTACGAAGTATATGATAAATGGAGTCCCTTATTGGAAGAGGAACACAGACCAACGAGTACCACCTGGT
PIGGYBAC ORF

1700
GAATCTACGTGAAGGAGTTATCAAAGCCTGTGCACGGTATTTGTCGTAATATTACGTGTGACAAATGGTTTACCTCAATCCCTTTGGCAAAAACTTAC
PIGGYBAC ORF

1800
TACAAGAACCGTATATAGTTAACCATTGTGGGAACCGTGGATCAACAAACGCGAGTACCGGAAGTACTGAAAAACAGTCCGCTCCAGGCCAGTGGGAAC
PIGGYBAC ORF

FIG. 9(B) cont.

1900
 ATCGATGTTTTGTTTTGACGGACCCCTTACTCTCGTCTCATATAAACCGAAGCCAGCTAAGATGGTACTTATTATCACTTGTGATGAGGATGCTTCT
 PIGGYBAC ORF
 2000
 ATCAACGAAAGTACCGGTAAACCGCAATGGTATGTATTATAATCAAACCTAAGGCGGAGTGGACACGCTAGACCAAAAGTGTTCGTGATGACCTGCA
 PIGGYBAC ORF
 2100
 GTAGGAAGACGAAATAGGTGGCTATGGCATTATTGTACGGAATGATTAACATTGCCTGCATAAATCTTTTATTATATACAGCCATATGTCAGTAGCAA
 PIGGYBAC ORF
 2200
 GGGAGAAAAGGTTCAAAGTCGCAAAAAATTTATGAGAAACCTTACATGAGCCTGACGTCATCGTTTATGCGTAAGCGTTTAGAAGCTCCTACTTTGAAG
 PIGGYBAC ORF
 2300
 AGATATTTGCGCGATAATATCTCTAATATTTTGCCTAATGAAGTGCCTGGTACATCAGATGACAGTACTGAAGAGCCAGTAATGAAAAACGTACTTACT
 PIGGYBAC ORF
 2400
 GTACTTACTGCCCCCTCTAAAATAAGGCGAAAGGCAATGCATCGTGCAAAAATGCAAAAAAGTATTGTCGAGGCAATATATTGATATGTGCCAAG
 PIGGYBAC ORF
 2500
 TGTGTTCTGACTGACTAATAAGTATAATTTGTTCTATTATGTATAAGTTAAGCTAATTACTTATTTTATAATACACATGACTGTTTTTAAAGTACAAA
 PIGGYBAC ORF
 2600
 ATAAGTTTATTTTGTAAAGAGAGAAATGTTTAAAGTTTGTACTTTAGAGAAATTTGAGTTTGTGTTTTTTTAAATAAATAAATAACATTAAT
 PIGGYBAC ORF
 2700
 AAATTGTTTGTGAATTTGGATCTCGAGGTTCCCAATGAGTTAATTCGAGCTCGCCCGGGGATCTAATTCAATTAGAGACTAATTCAATTAGAGCTAAT
 PIGGYBAC ORF 3XP3 PROMOTER
 2800
 TCAATTAGGATCCAGCTTATCGAATTCGAACCCCTCGACCGCCGAGTATAAATAGAGCGCTTCGCTACGGAGCGCAATTCAATTCAACAAGCAAA
 3XP3 PROMOTER
 2900
 GTGAACACGTCGCTAAGCGAAAGCTAAGCAAAATAACAAGCGTACGTAACAAGCTAAACAATCGGGGTACCGCTAGACTCGACGGTACCGCGGGCCCCGG
 3XP3 PROMOTER
 3000
 GATCCACCGGTGCGCCACCATGAATTTCTGAGTCTGACGGTACCGCGGGCCCCGGGATCCACCGGTGCGCCACCATGCTGCGCTCTCCAAAGAACGTCATCAAG
 3XP3 PROMOTER
 DSRED GENE
 3100
 GASTTCATGCGCTTCAAGGTCCGCATGGAGGGCACCGTGAACGGCCACGAGTTCCAGATCTGAGGGCCAGGCGAGGGCCGCCCTTACGAGGGCCACACA
 DSRED GENE
 3200
 CCGTGAAGCTGAAGGTGACCAAGGGCGGCCCTGCCCCCTGCGCTGGGACATCTGTCCCCCAGTTCCAGTACGCTCCAAAGGTGTACGTGAAGCACCC
 DSRED GENE
 3300
 CGCCGACATCCCGACTACAAGAGCTGTCTTCCCCGAGGGCTTCAAGTGGGAGCGCGTGAAGACTTCGAGGACGGCGGCGTGGTGACCGTGACCCAG
 DSRED GENE
 3400
 GACTCTCCCTGACGACGGCTGCTTCATCTACAAGGTGAAGTTTATCGCGTGAAGTTTCCCTCCGACGGCCCCGTAAATGCAGAGAAGACCATGCGGT
 DSRED GENE
 3500
 GGGAGGGCTCCACCGAGCGCTGTACCCCCGCGACGCGCTGCTGAAGGGCGAGATCCACAAGGCCCTGAAGCTGAAGGACGGCGGCCACTTACCTGGTGA
 DSRED GENE
 3500
 GTTCAAGTCCATCTACATGSCCAAGAAGCCCGTGCAGCTGCCCCGGCTACTACTAGTGGACTCCAAGCTGACATCAGCTCCCAACAGGAGGACTACCC
 DSRED GENE

FIG. 9(B) cont.

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ATCGTGGAGCACTACGAGCGCACCAGGSCCCACCACCTGTTCTCTGTAGCGCGCGCACTCTAGATCATAATCAGCCATACCACATTGTGTAGAGGTTT
      OSRED GENE
TACTTGCTTTAAAAAACCTCCACACCTCCCCCTGAACCTGAACATAAAATGAATGCAATTGTTGTTGTEAACTTGTTTATTGCAGCTTATAATGGTTA
      3800
CAATAAAGCAATAGCATCACAAATTTCAAAATAAAGCAITTTTTCACATGCAATTCTAGTTGTGGTTTGTCAAACTCATCAATGTATCTTAAGCGSTA
      3900
>sl_single-strand_DNA_origin
      |
AATGTAAAGCGTTAATATTTTGTATAAAATTCGCGTAAATTTTGTAAATCAGCTCAITTTTAACCAATAGGCCGAAATCGGCCAAAATCCCTTATAAA
      4000
TCAAAAGAAATAGACCGGAGATAGGGTTGAGTGTGTTCAGTTTGGAAACAAGAGTCCACTATTAAGAAGCTGCACTCCAACTCAAGGGCGAAAAACCG
      4100
TCTATCAGGGCGATGSCCCACTACGTGAACCATCACCTAATCAAGTTTTCGGGCTCAGGTGCCGTAAAGCACTAAATCGGAACCTTAAGGGGAGCCCC
      4200
CCGATTAGAGCTTGACGGGGAAAGCGGGCGAAGCTGGCGAGAAAGGAAGGGAAGGGAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCGGTTC
      4300
ACGCTGCGCGTAACCACACACCCGCGCGCTTAATGCGCGCTACAGGGCGCGCTCAGCTGCCACTTTTCGGGGAAATGTCGCGGGAACCCCTATTGTTT
      4400
>Bacterial_promoter_for_expression_of_Kan_resistance_gene
      |
TATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACATAACCTGTATAATGCTTCAATAATATTGAAAAGGAGAGTCTGAGSGCGGAAG
      4500
      >SV40_early_promoter_and_origin_of_replication
      |
AACCAGCTGTGGAATGTGTGTCACTAGGGTGTGGAAAGTCCCCAGGCTCCCCAGCAGCGAGAGTATGCAAGCATGCACTCAATTAGTCAGCAACCA
      4600
GGTGTGGAAGTCCCCAGGCTCCCCAGCAGGCGAAGTATGCAAGCATGCACTCAATTAGTCAGCAACCATAGTCCCGCCCCCTAACTCCGCCCATCCC
      4700
GCCCCCTAACTCCGCCCAGTTCGCCCCATTCTCCGCCCATGGCTGACTAATTTTTTATTATGCAAGGCGCGAGGCCGCTCGGCTCTGAGCTATTTC
      4800
CAGAAGTAGTGAGSAGGCTTTTGTGAGSCCTAGGCTTTGCAAGATCGATCAAGAGACAGGATGAGGATCGTTTCGCATGATTGAACAAGATGGAATTG
      4900
      >
CACGCAAGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTTCGGCTATGACTGGGCACAAAGACAAATCGGCTGCTCTGATGCCGCCGTGTTCCGGCTGTTCAG
      5000
      KANAMYCIN RESISTANCE GENE
CGCAGGGGCGCCCGGTTCTTTTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAAGTCAAGACGAGGCGAGCGGCTATCGTGGCTGGCCAGCAGCGGG
      5100
      KANAMYCIN RESISTANCE GENE
CGTTCCTTGCGCAGCTGTGCTCGACGTTGTCTACTGAAGCGGGAGGGAGTGGCTGCTATGCGGCGAAGTGCAGGGGCGAGGATCTCCTGTCTATCTACCTT
      5200
      KANAMYCIN RESISTANCE GENE
GCTCCTGCGCGAGAAAGTATCCATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTCGACCACCPAGCGAAACATCGCA
      5300
      KANAMYCIN RESISTANCE GENE
TCGAGCGAGCAGTACTCGGATGGAAGCCGCTCTTGTGCAATCAGGATGATCTGGACCAAGAGCATCAGGGGCTCGCGCCAGCCGAAGTGTTCGCCAGGCT
      5400
      KANAMYCIN RESISTANCE GENE
CAAGCGAGCATGCCCGACGGCGAGGATCTCGTCTGACCCATGGCGATGCTGCTTGGCGAATATCATGTTGGAAAATGGCCGCTTTTCTGCAATCATC
      5500
      KANAMYCIN RESISTANCE GENE
GACTGTGGCGGCTGGGTGTGGCGGACCGCTATCAGGACATAGCGTTGGCTACCGGTGCTATTCCTGAGAGCTTTGSCGGCGAAATGGGCTGACCGCTTCC
      5600
      KANAMYCIN RESISTANCE GENE

```

Fig. 9(B) cont.

```

5100
TCGTGCTTTACGGTATCGCCGCTCCCGATTCCGACGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGCGGGACTCTGGGGTTCGAAATGACC
      KANAMYCIN RESISTANCE GENE
5800
GACCAAGCGACGCCCCAACCTGCCATCAGGAGATTTGATTCCACCGCGCGCTTCTATGAAAGGTTGGGCTTCGGAATCGTTTCCGGGACGCCGGCTGGA
5900
TGATCCTCCAGCGCGGGGATCTCATGCTGGAGTTCITCGCCACCCCTAGGGGGAGGCTAACTGAAACACGGAAGGAGACAATACC GGAAGGAACCCGCGC
>Herpes_simplex_virus_(HSV)_thymidine_kinase_(TK)_polyA_signal=
6000
TATGACGGCAATAAAAAGACAGAATAAAACGCACGGGTGTTGGGTCGTTTGTTCATAAACCGGGGTTCCGGTCCCAGGGCTGGCACTCTGTGATACCCCA
6100
CCGAGACCCCAATTGGGGCCAATACGCCCGCGTTTCTCTCTTTTCCCAACCCACCCCAAGTTCCGGGTGAAGGCCAGGGCTCGCAGCCAACGTCGGGG
6200
CGGCAGGCCCTGCCATAGCCTCAGGTTACTCATATATCTTGAATGATTTAAACTTCATTTTAAATTAAAAGGATCTAGGTGAAGATCCTTTTTTGA
      >pUC_plasmid_replication_origin
6300
TAATCTCATGACCAAAATCCCTTAACGTGAGTTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAGGATCTTCTTGAGATCCTTTTTTTCTG
6400
CGCGTAATCTGCTGCTTGCAACAAAAAACACCGCTACCAGCGGTGGTTTGTGTTGCCGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAACGCGCT
6500
TCAGCAGAGCGCAGATACCAATACTGTCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACCAGCCTACATACCTCGCTCTGCT
6600
AATCCTGTTACAGTGGGTGCTGCCAGTGGCGATAAGTCGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCCAGCGGTGCGGGCTGA
6700
ACGGGGGGTTCGTGCACACAGCCCAAGCTTGGAGCGAAGACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCGAAG
6800
GGAGAAAGCGGACAGGTATCCGGTAAGCGGCAGGGTGGAAACAGAGAGCGCACGAGGGAGCTTCCAGCGGGAACGCTGGTATCTTTATAGTCTGT
6900
CGGGTTTCGCCACCTCTGACTTGAGCGTGGATTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAAAACGCCAGCAACCGGCCCTTTTACGGTTC
CTGGCCTTTTGTGCGCTTTTGCTCACATGTTCTTTCCTGCGTATCCCTGATTCTGTGGATAACCGTATTACGCCCATGCAAT (SEQ ID NO: 45)

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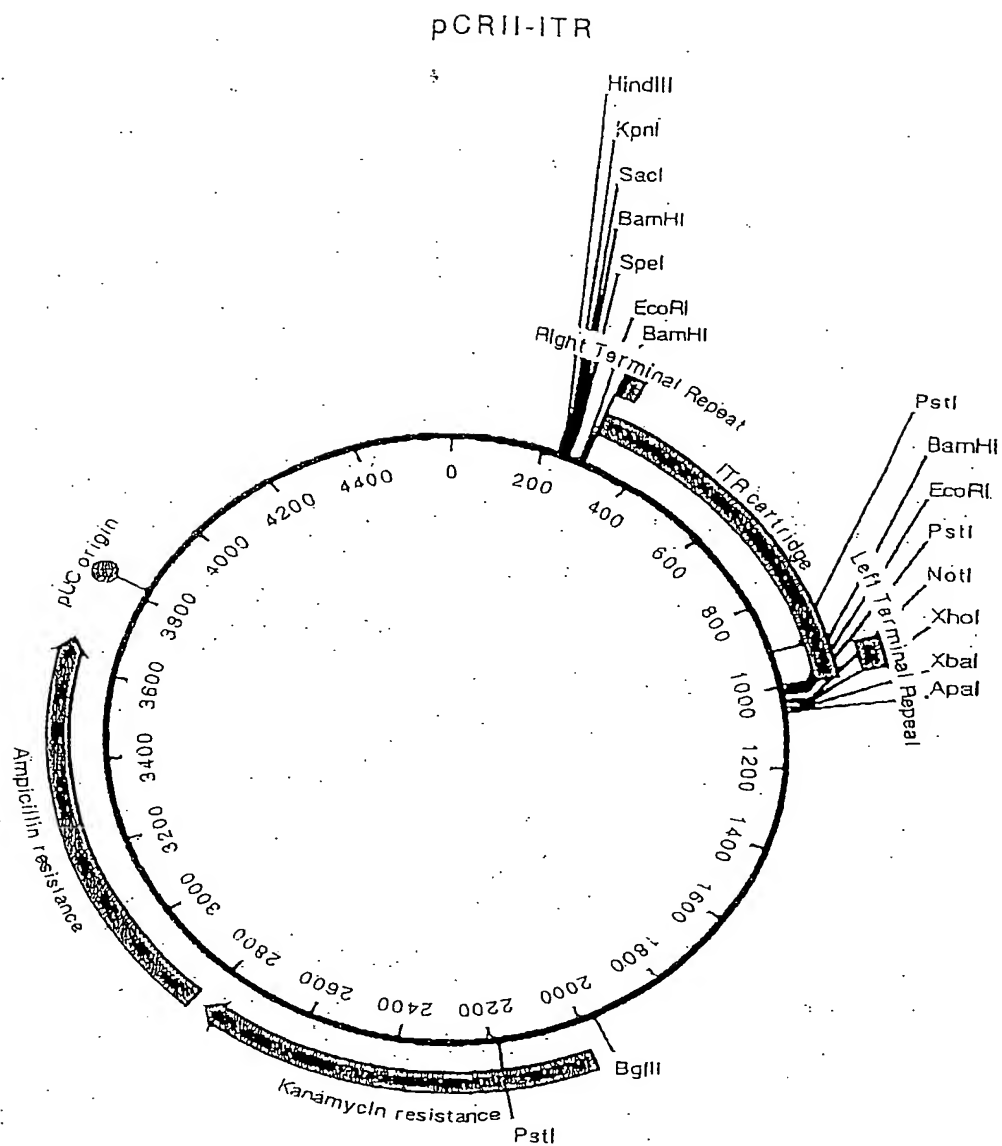



FIG. 10(A)

Sequence Range: 1 to 4613

100

AGCGCCCAATACGCAAACCGCCTCTCCCCGCGCGTTGGCCGATTCATTAATGCAGCT
GGCAGGACAGGTTTCCCGACTGGAAAGCGGGCAGTGAGCGCAA

200

CGCAATTAATGTGAGTTAGCTCACTCATTAGGCACCCCAGGCTTTACACTTTATGCTT
CCGGCTCGTATGTTGTGTGGAATTGTGAGCGGATAACAATTT

300

CACACAGGAAACAGCTATGACCATGATTACGCCAAGCTTGGTACCGAGCTCGGATC
CACTAGTAACGGCCGCCAGTGTGCTGGAATTCGGCTTGGATCCC

->

400

ATGCGTCAATTTTACGCAGACTATCTTTCTAGGGTTAATCTAGCTGCATCAGGATCAT
ATCGTCGGGTCTTTTTTCCGGCTCAGTCATCGCCCAAGCTGG

L H Q D H I V G S F F R L S H R P S W>

___B (CAPSID COMPONENT;533); CODON_START=1;

DB_XREF=P___>

L H Q D H I V G S F F R L S H R P S W>

_____PROCESSED B; CODON_START=1

[SPLIT]_____>

_____RIGHT TERMINAL REPEAT_____>

500

CGCTATCTGGGCATCGGGGAGGAAGAAGCCCGTGCCTFTTCCCGCGAGGTTGAAGC
GGCATGGAAAGAGTTTGCCGAGGATGACTGCTGCTGCATTGACG

R Y L G I G E E E A R A F S R E V E A A W K E F A E D D C C C
I D>

_____B (CAPSID COMPONENT;533); CODON_START=1;

DB_XREF=PID:G215108; TRA [SPLIT]_____>

FIG. 10(B)

RYLGIGEEEARAFSREVEAAWKEFAEDDCCC
I D>

[SPLIT]_____> PROCESSED B; CODON_START=1

600

TTGAGCGAAAACGCACGTTTACCATGATGATTCGGGAAGGTGTGGCCATGCACGCCT
TTAACGGTGAACGTTCGTTTCAGGCCACCTGGGATACCAGTTC
VERKRTFTMMIREGVAMHAFNGELFVQATW
DTS S>

DB_XREF=PID:G215108; TRA [SPLIT]_____> B (CAPSID COMPONENT;533); CODON_START=1;

VERKRTFTMMIREGVAMHAFNGELFVQATW
DTS S>

[SPLIT]_____> PROCESSED B; CODON_START=1

700

GTCGCGGCTTTTCCGGACACAGTTCCGGATGGTCAGCCCGAAGCGCATCAGCAACCC
GAACAATACCGGCGACAGCCGGAAGTCCCGTGCCGGTGTGCAG
SRLFR TQFRMVSPKRISNPNNNTGDSRNCRAG
V Q>

DB_XREF=PID:G215108; TRA [SPLIT]_____> B (CAPSID COMPONENT;533); CODON_START=1;

SRLFR TQFRMVSPKRISNPNNNTGDSRNCRAG
V Q>

[SPLIT]_____> PROCESSED B; CODON_START=1

800

ATTAATGACAGCGGTGCGGCGCTGGGATATTACGTGAGCGAGGACGGGTATCCTGG
CTGGATGCCGCGAGAAATGGACATGGATACCCCGTGAGTTACCCG
INDSGAALGYYS E DGYPGWMPQKW TWIPR
EL P>

FIG. 10(B).

_____B (CAPSID COMPONENT;533); CODON_START=1;
DB_XREF=PID:G215108; TRA [SPLIT]____>
I N D S G A A L G Y Y V S E D G Y P G W M P Q K W T W I P R
E L P>

_____PROCESSED B; CODON_START=1
[SPLIT]____>

900

GCGGGCGCGCCTCGTTCATTCACGTTTTTTGAACCCGTGGAGGACGGGCAGACTCGCG
GTGCAAATGTGTTTTACAGCGTGATGGAGCAGATGAAGATGCT
G G R A S F I H V F E P V E D G Q T R G A N V F Y S V M E Q M
K M L>

_____B (CAPSID COMPONENT;533); CODON_START=1;
DB_XREF=PID:G215108; TRA [SPLIT]____>
G G R A S F I H V F E P V E D G Q T R G A N V F Y S V M E Q M
K M L>

_____PROCESSED B; CODON_START=1
[SPLIT]____>

1000

CGACACGCTGCAGAACACGCAGCTAGATTAACCCTAGAAAGATAATCATATTGTGA
CGTACGTAAAGATAATCATGCGTAAATGACGCATGGGATCC

D T L Q N T Q> (SEQ ID NO: 47)

___B (CAPSID COMPO___>

D T L Q N T Q> (SEQ ID NO: 47)

___PROCESSED B; CO___>

_____LEFT TERMINAL
REPEAT_____>

1100

AAGCCGAATTCTGCAGATATCCATCACACTGGCGGCCGCTCGAGCATGCATCTAGAG
GGCCCAATTCGCCCTATAGTGAGTCGTATTACAATTCACTGGC

1200

FIG. 10(B)

CGTCGTTTTACAACGTCGTGACTGGGAAAACCCTGGCGTTACCCAACTTAATCGCCT
TGCAGCACATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAG

1300

GCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGGACGC
GCCCTGTAGCGGCGCATTAAAGCGCGGCGGGTGTGGTGGTTACGC

1400

GCAGCGTGACCGCTACACTTGCCAGCGCCCTAGCGCCCGCTCCTTTTCGCTTTCTTCCC
TTCCTTTCTCGCCACGTTTCGCCGGCTTTCCCCGTCAAGCTCT

1500

AAATCGGGGGCTCCCTTTAGGGTTCCGATTTAGAGCTTTACGGCACCTCGACCGCAA
AAAACCTTGATTTGGGTGATGGTTCACGTAGTGGGCCATCGCCC

1600

TGATAGACGGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACTCT
TGTTCCAAACTGGAACAACACTCAACCCTATCGCGGTCTATT

1700

CTTTTGATTTATAAGGGATTTTGCCGATTTTCGGCCTATTGGTTAAAAAATGAGCTGAT
TTAACAAATTCAGGGCGCAAGGGCTGCTAAAGGAACCGGAAC

1800

ACGTAGAAAGCCAGTCCGCAGAAACGGTGCTGACCCCGGATGAATGTCAGCTACTG
GGCTATCTGGACAAGGGAAAACGCAAGCGCAAAGAGAAAGCAGG

1900

TAGCTTGCAGTGGGCTTACATGGCGATAGCTAGACTGGGCGGTTTTATGGACAGCAA
GCGAACCGGAATTGCCAGCTGGGGCGCCCTCTGGTAAGGTTGG

FIG. 10(B)

2000

GAAGCCCTGCAAAGTAAACTGGATGGCTTTCTTGCCGCCAAGGATCTGATGGCGCA
GGGGATCAAGATCTGATCAAGAGACAGGATGAGGATCGTTTCGC

2100

ATGATTGAACAAGATGGATTGCACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCT
ATTCGGCTATGACTGGGCACAACAGACAATCGGCTGCTCTGATG

2200

CCGCCGTGTTCCGGCTGTCAGCGCAGGGGCGCCCGGTTCTTTTTGTCAAGACCGACC
TGTCCGGTGCCCTGAATGAACTGCAGGACGAGGCAGCGCGGCT

2300

ATCGTGGCTGGCCACGACGGGCGTTCTTGCGCAGCTGTGCTCGACGTTGTCACTGA
AGCGGGAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAG

2400

GATCTCCTGTCATCTCGCCTTGCTCCTGCCGAGAAAGTATCCATCATGGCTGATGCA
ATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTTCG

2500

ACCACCAAGCGAAACATCGCATCGAGCGAGCACGTACTCGGATGGAAGCCGGTCTT
GTCGATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCC

2600

AGCCGAACTGTTTCGCCAGGCTCAAGGCGCGCATGCCCCACGGCGAGGATCTCGTCG
TGATCCATGGCGATGCCTGCTTGCCGAATATCATGGTGGAATAAT

2700

GGCCGCTTTTCTGGATTCAACGACTGTGGCCGGCTGGGTGTGGCGGACCGCTATCAG

FIG. 10(B)

GACATAGCGTTGGATACCCGTGATATTGCTGAAGAGCTTGGCG

2800

GCGAATGGGCTGACCGCTTCCTCGTGCTTTACGGTATCGCCGCTCCCGATTTCGCAGC
GCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAATTGA

2900

AAAAGGAAGAGTATGAGTATTCAACATTTCCGTGTCGCCCTTATTCCCTTTTTTGCGG
CATTTTGCCTTCCTGTTTTTGCTCACCCAGAAACGCTGGTGA

3000

AAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTTACATCGAACTGGAT
CTCAACAGCGGTAAGATCCTTGAGAGTTTTCGCCCCGAAGAACG

3100

TTTTCCAATGATGAGCACTTTTAAAGTTCTGCTATGTCATACTATTATCCCGTATT
GACGCCGGGCAAGAGCAACTCGGTGCGCGGGCGCGGTATTCT

3200

CAGAATGACTTGGTTGAGTACTCACCAGTCACAGAAAAGCATCTTACGGATGGCAT
GACAGTAAGAGAATTATGCAGTGCTGCCATAACCATGAGTGATA

3300

ACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAACCGCT
TTTTTGCACAACATGGGGGATCATGTAACCTCGCCTTGATCGTTG

3400

GGAACCGGAGCTGAATGAAGCCATACCAAACGACGAGAGTGACACCACGATGCCTG
TAGCAATGCCAACACGTTGCGCAAACCTATTAACCTGGCGAACTA

3500

FIG. 10(B)

CTTACTCTAGCTTCCCGGCAACAATTAATAGACTGGATGGAGGCGGATAAAGTTGCA
GGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTGGTTTATTG

3600

CTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACTGGGGC
CAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGG

3700

GAGTCAGGCAACTATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCAC
TGATTAAGCATTGGTAACTGTCAGACCAAGTTTACTCATATATA

3800

CTTTAGATTGATTTAAACTTTCATTTTTTAATTTAAAAGGATCTAGGTGAAGATCCTTT
TTGATAATCTCATGACCAAATCCCTTAACGTGAGTTTTCGT

3900

TCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTT
TTCTGCGCGTAATCTGCTGCTTGCAAACAAAAAAACCACCGT

4000

ACCAGCGGTGGTTTGTGTTGCCGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAAC
TGGCTTCAGCAGAGCGCAGATACCAAATACTGTCCTTCTAGTG

4100

TAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACCGCCTACATACCTCGCT
CTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGT

4200

CGTGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGTGCG
GGCTGAACGGGGGGTTTCGTGCACACAGCCCAGCTTGGAGCGAAC

FIG. 10(B)

4300

GACCTACACCGAACTGAGATACCTACAGCGTGAGCATTGAGAAAGCGCCACGCTTC
CCGAAGGGAGAAAGGCGGACAGGTATCCGGTAAGCGGCAGGGTC

4400

GGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGGAAACGCCTGGTATCTTTATAG
TCCTGTCGGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTTGT

4500

GATGCTCGTCAGGGGGGGCGGAGCCTATGGAAAAACGCCAGCAACGCGGCCTTTTTTA
CGGTTCCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCC

4600

TGCGTTATCCCCTGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACC
GCTCGCCGCAGCCGAACGACCGAGCGCAGCGAGTCAGTGAGC

GAGGAAGCGGAAG (SEQ ID NO: 46)

FIG. 10(B)

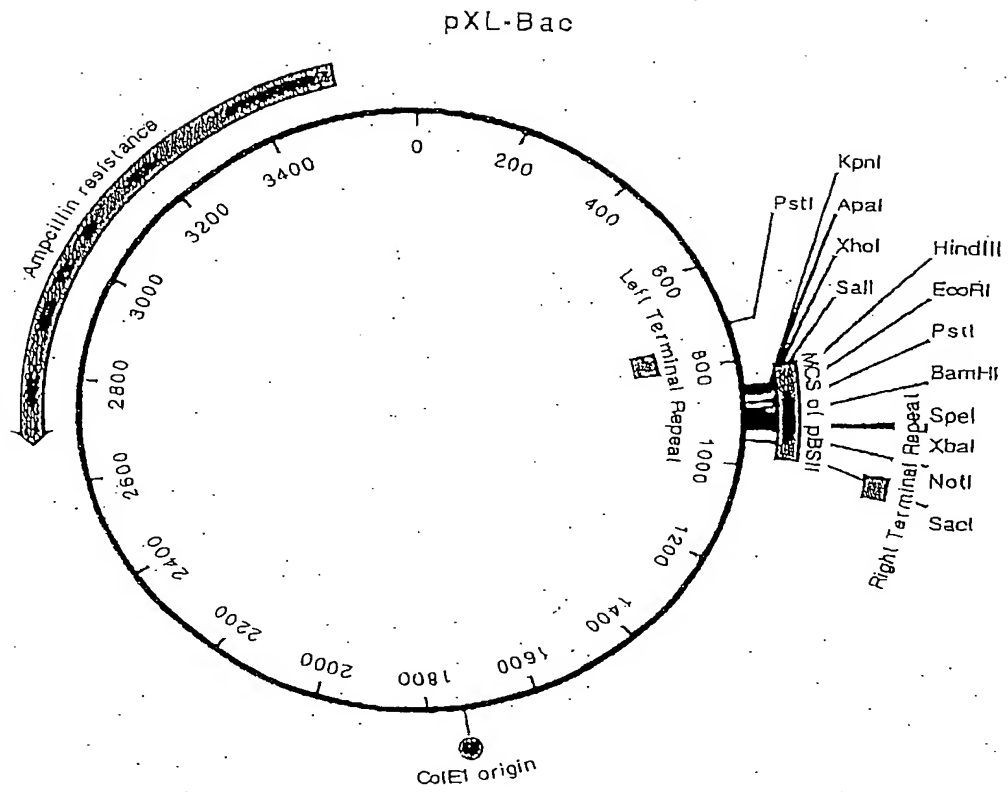


FIG. 11

p(PZ)-Bac-EYFP

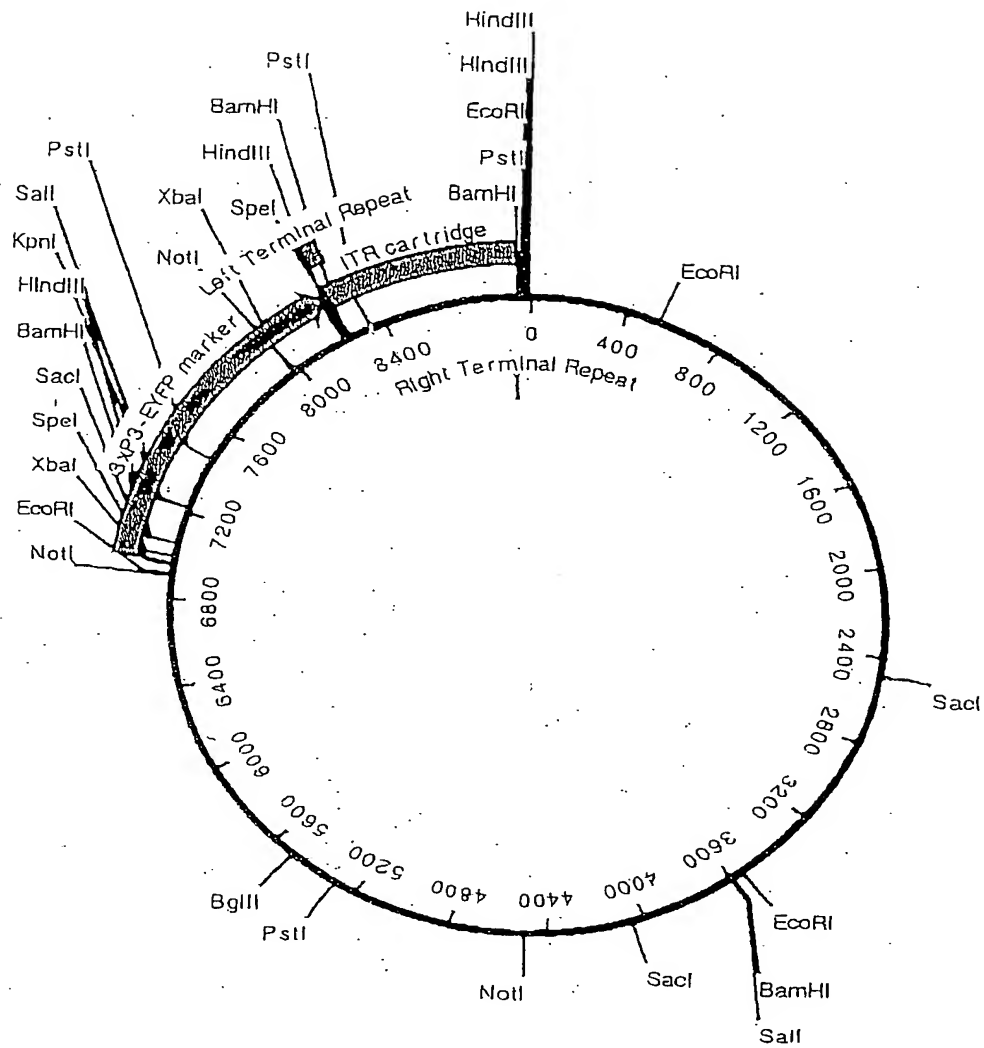


FIG. 12(A)

100
ACGSAAGTATACACTTAAATTCAGTGCACGTTTGGCTTGTGAGAGGAAAGCTTGTGTGCGGACGAATTTTTTTTTTGAACATTAAACCTTACGTGGAAAT
200
AAAAAAAAATGAAATATTGCAAAATTTGCTGCRAAGCTGTGACTGAGTAAATTAATTCACGTGCCGAAGTGTGCIATTAAAGAGAAAATTTGTGGGAGCA
300
GAGCCTTGGGTGCAGCCTTGGTGAAACTCCCAAATTTGTGATACCCACTTTAATGATTGCACTGGAAGGCTGCACCTGCAAAAGGTCAGACATTAA
400
AGGAGGCGACTCAACCGCATGCGGTACCTAGTAAAGTATAGAGCCTGAACAGAAAAGATAAAAGAAGGCTATACCACTGGGAGTACACAAACAGAT
500
AAGTTTGAATAGTAAAAAAATCATTATGTAAACAATAACGTGACTGTGCGTTAGGTCTCTTCAATTGTTTAATGAAAATAAGAGCTTGAGGGAAAAA
600
TTCTGACTTTGGAGTACGAAATGCGTCGTTTGAAGCAGCAGCCGAATTCACGTGCGCTCTGTTTACACCTGCTGACTGGGAAACCTTGGCGTTACCCA
700
ACTTAATCGCCTTGCAGCAGATCCCTCTTTGCGCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGC
800
GAATGGCGCTTTGCGTGTTCCTGGCACCAGAAGCGGTGCGGAAAGCTGCTGGAGTGCATCTTCCTGAGGCGGATCTGTCGTCTCCCTCAAAT
900
GGCAGATGCACGGTTACGATGCGCCCATCTACACCAACGTAACTATCCATTACGGTCAATCCGCGCTTTGTTCCACGGAGAATCCGACGGGTGTTA
1000
CTCGCTCACATTAAATGTTGATGAAGCTGGCTACAGGAAGGCCAGACGCAATTAATTTTATGCGCTTAACCTGGCGTTTCATCTGTGGTGCACAGGG
1100
CGCTGGGTGCGTTACGGCCAGGACACTCGTTTGCCTGTGAATTTGACCTGAGCGCAATTTTACGCGCCGGAGAAAACCGCTCGCGGTGATGGTCTGC
1200
GTTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCAATTTCCGTGACGTCTCTGCTGCTAATACCGACTACACAAATCAG
1300
CGATTTCCATCTTCCACTCGCTTTAATGATGATTTGAGCCGCGCTGTACTGGAGCCTGAATTCAGATGTGCGCGGAGTTGCGTGACTACCTAGGGTA
1400
ACAGTTTCTTATGGCAGGGTGAAACGCGAGGTGCGCAGCGGACCGCGCTTTGCGCGGTGAAATATATGATGAGCGTGGTGTATGCGCATCGCGTCA
1500
CACTACGTCTGAACGTGAAAACCCGAACTGTGGAGCGCCGAAATCCCGAATCTCTATCTGCGGTGGTGAATGACACCGCCGACGGCAGCTGAT
1600
TGAAGCAGAAGCCTGCGATGTGCGTTTCCGCGAGGTGCGGATGAAATGGTCTGCTGCTGCTGAACGCGAAGCGGTGCTGATTCAGGCGTTAACCGT
1700
CAGGAGCATCTCTCTGCTGCTGAGGTGAGTATGATGAGCAGAGATGCTGAGGATATCTGCTGATGAGCAGAACACTTTAACGCCGTGCGCTGTT
1800
CGCATTATCCGAACCATCCGCTGTGCTACCGCTGTGCGACCGCTACGGCTGTATGTGGTGAATGAAGCCAAATATTGAACCCACGGCATGGTCCAAAT
1900
GAATCGTCTGACCGATGATCCGCGCTGGCTACCGCGATGAGCGAAGCGCTAACCGCAATGGTGCAGCGCGATCGTAATCACCCGAGTGTGATCATCTGG
2000
TCGCTGGGGAATGAATCAGGCCACGGCGCTAATCAGCAGCGCTGTATCGCTGATCAAACTGTGCGATCTTCCCGCCCGGTGCAATGAAGCGGGCG
2100
GAGCCGACACCGCGCCACCGAATATTGCCCCGATGTACCGCGCGGTGATGAAGACCAAGCCCTTCCCGGCTGTGCGGAAATGGTCCATCAAAAATG
2200
GCTTTCGCTACCTGAGAGACCGCGCCGCTGTCTTTGCGAATACGCCACCGCATGGGTAACGCTTTGGCGGTTTCTGCTAAATACTGCGAGCGCTTT
2300
CGTCAGTATCCCGTTTACAGGGCGGCTTCTGCTGCGGACTGGGTGATCAGTCCCTGATTAAATATGATGAAAACGGCAACCGGTGCTGCGCTTACGGCG
2400
GTGATTTTGGCGATACGCCAAGCATGCCAGTTCTGTATGAAGGCTGCTGTTTGGCGACCGCGCGCATCCAGCGCTGACGGAAGCAAAACCA
2500
GCAGCAGTTTTCAGTTCCGTTTATCCGGGCAACCATCGAAGTGACCAAGCAATACCTGTTCCTGCTATAGCGATAACAGCTCTGCACTGAGTGGT

FIG. 12(B) cont.

2500
 GCGCTGGATGGTAAGCCGCTGGCAAGCGSTGAAGTGCCTCTGATGTGCTCCACAAGGTAAACAGTTGATTGAAGTGCCTGAACTACCGCAGCCGGAGA
 2700
 GCSCCGGGCAACTCTGGCTCAGATACGGTACTGTCAACCGAAGCGGACCCGATGCTCAGAACCCGGSCACATCAGCGCCTGGSCAGCAGTGGCGTCTGGC
 2800
 GGAARACCTCAGTGTGACGCTCCCGCCGCGTCCACGCGCATCCCGCATCTGACCAACGCGAATGGAATTTTGCATCAGCTGGGTAAATAAGCGTTGG
 2900
 CAATTAACCGCCAGTCAGGCTTTCCTTCAAGATGTGATTTGGCGATAAAAACTGCTGACGCGCTGGCGGATCAGTTTACCCGTCACCGCTGG
 3000
 ATAACGACATTGGCGTAAGTGAAGCEACCCGATTAACCGCTGGGTGGAACGCTGGAAGCGCGCGGGCCATTACCGAGCCGAGCAGCGTTGT
 3100
 GCACTGCACGGCAGATACACTTGTGATGCGGTGCTGATTACGACCGCTCAGCGCTGGCAGCATCAGGGGAAAACTTATTATCAGCCGGAACCTAC
 3200
 CGGATTGATGGTACTGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACCCCATCGCGCGCGGATTGGCGCTGAACTGCCAGCTGGCGC
 3300
 AGGTAGCAGAGCGGGTAAACTGGCTCGGATTAGGGCCGCAAGAAAATATCCGACCGCTTACTGCGCGCTGTTTGGACCGCTGGGATCTGCCATTGT
 3400
 AGACATGTATACCCGCTACGCTCTCCCGAGCGAAACGGTCTGCGCTGGGGACGCGGAATTGAATTATGGCCACACAGTGGCGCGCGGCACTTCCAG
 3500
 TTCAACATCAGCGCTACAGTCAACAGCAACTGATGGAACCAAGCATCGCCATCTGCTGACGCGGAAGAAGGCACATGGCTGAATATCGACGGTTTCC
 3600
 ATATGGGATTGGTGGCGACGACTCTGAGAGCCGTCAGTATCGCGGAATTCAGCTGAGCGCGCGCTGCTACCATACAGTTGGTCTGGTGTGGGG
 3700
 ATCCGTCGACTAAGGCCAAAGAGTCTAATTTTGTTCATCAATGGGTATAACATATGGGTATATATTAAGTTTGTTTTAAAGTTTGTGAGACTGATAAG
 3800
 AATGTTTCGATCGAATATTCATAGAACCAACATAGTATTACCTAATTACCAAGTCTTAATTAGCAAAAATGTTATTGCTTATAGAAAAATAAATTAT
 3900
 TTATTTGAAATTTAAAGTCAACTTGTCAATTAATGCTCTGTAGACTTTTGAAGCTTACGATACAAATAGTATCTAATATACATGGGTTCAATCTACAT
 4000
 TCTATATTAGTGAATTCCTTTAGCTAGTAATACATTTAATTATATTCGGCTTTGATGATTTCTGATTTTTCGAAACGGATTTTCGTAGACCTTT
 4100
 CGATCTCATATAGSCTCAITTTIATTGCGATGACGGTCAGGAGAGCTCCACTTTTGAATTTCTGTTCGAGACACCGCATTTGAGCAGATAGCGGGAC
 4200
 ATCCGGTTTGGGGAGATTTCCAGTCTCTGTGTCAATGGTTTTCGGGAATGGGTTGACGGCGCATACGCTCTATATCTCCGAACGGCGCTGGTTCAGC
 4300
 CTAGCATTTACATAAGGATCAGCAGCAAAATTTGCTCTGCTTCAITGCCCCGGAATCAGCAATCAGATGTCCCTTTTGGGTTACGATGGAATTCAGGT
 4400
 GCGAACCAGCACAAAGCTCTCGCCGCACTCCCACTGATATGGTCTGCGCCCTGTGGCGCCGATATGGAATCTTAAGGTCTGTGGACTGCACAAAG
 4500
 CTCTGTCTGCACATTTTGCAGGAGTACGGCCCTTGAACCGTGTGCAATCGCATGTGTGCGCCAGCTGTGTTCTGCGAAATAAACTTCTTGGAGCAGATGC
 4600
 GGCCGCCCCGGGTGGCGAAGAACTCCAGCATGAGATCCCGCGCTGGAGGATCATCCAGCCGCGCTCCCGGAAACGATTCGAAGCCCAACCTTTTAT
 4700
 AGAAGCGCGCGGTGGAATCGAATCTCGTGAATGCGAGGTGGGGCTGCTTGGTGGTCAITTCGAACCCAGAGTCCCGCTCAGAAGAACTCGTCAAGA
 4800
 AGGCGATAGAAAGCGATGCGCTGCGAATCGGGAGCGSCGATACCGTAAGCAGAGGAAGCGGTTCAGCCCATTCGCCGCCAAGCTCTTCAGCAATATCAC
 4900
 GGGTAGCCACGCTATGCTCTGATAGCGGTCCGCCACACCCAGCCGGCCACAGTCAATGAATCCGAAAGCGGCCATTTTCACCATGATATTGGGCAA
 5000
 GCAGGCATCGCCATGGGTACGACAGATCTCGCCCTCGGGCATGCGCGCCCTTGAGCCTGGCGAACAGTTGGGCTGGCGCGAGCCCTGATGCTGTTCG

FIG. 12(B) cont.

TCCAGATCATCTGATCACAAGACCGGCTTCCATCCGAGTACGTGCTCGCTCGATGTTTTCGCTTGGTGGTGAATGGGACGGTAGCCGGATCAA 5100
 GCGTATGCAGCCGCCGCTTGCTATCAGCCATGATGATACCTTCTCGGAGGAGCAAGGTGAGATGACAGGAGATCCTGCCCGGCACTTCGCCCATAG 5200
 CAGCCAGTCCCTTCCCGCTTCAGTGACAACGTGAGCAGCAGCTGCGCAGGAACGCCCGTCTGGCCAGCCACGATAGCCCGCTGCTCTCTCTGCT 5300
 TCATTAGGGCACCAGGACAGGTGCTGCTTGACAAAAGAACCGGCGCCCTGCGCTGACAGCCGAACACGGCGGATCAGAGCAGCCGATTGCTGTT 5400
 GTGCCAGTCAAGCCGATAGCCTCTCCACCCAGCGGCGGAGAACCTGCGTGCAATCCATCTTGTTCATCTGCGAAACGATCCTCATCTCTCTC 5500
 TTGATCAGATCTTGATCCCTGCGCATCAGATCTTGGCGGCAAGAAAGCCATCCAGTTTACTTTGAGGGCTTCCCAACCTTACGAGAGGGCGCCCA 5600
 GCTGGCAATTCGGTTCTGCTTCTGCTTCCATAAAACCGCCAGTCTAGCTATGCGCATGTAAGCCCACTGCAAGCTACCTGCTTTCTCTTTGCGCTTGGCT 5700
 TTTCCCTTGTCCAGATAGCCAGTAGCTGACATTCATCCGGGCTCAGCACCCTTCTGCGGACTGGCTTTCTACGTGTTCCGCTTCTTTAGCAGCCCTT 5800
 GCGCCCTGAGTCTTGGCGGAGCCTGAAGCTAATTCATGGTTAATAATTTTGTAAATCAGCTCATTTTAAACCAATAGGCGAAATCGGCAAAATCC 5900
 CTTATAATCAAAAGAAATAGCCGAGATAGGTTGAGTGTGTTCCAGTTTGGAAACAGAGTCCACTATTAAAGAACGTGAGCTCCACGCTCAAGGGCG 6000
 AAAAACCGTCTATCAGGGCGATGGCCGATCAGCTTATGCGGTGTGAATACCGACAGATGCGTAAGGAGAAATACCGCATCAGGGCGCTCTTCCGCTT 6100
 CCTGCTCACTGACTGCT 6200
 CGCAGGAAAGACATGTGAGCAAAAGGCCAGAAAGGCCAGGAACCTAAAAAGGCCGCTGCTGCGGTTTTTCATAGGCTCCGCCCCCTGACGAG 6300
 CATCAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAGATACAGGGCTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCTG 6400
 TTCCGACCTTCCGCTTACCGGATACCTGTCCGCTTCTCTCTCTGCGGAAGCGTGCGCTTCTCATAGCTCAGCTGTAGGTATCTCAGTTCCGTTGA 6500
 GGTGCTTCTGCTCCAGCTGGGCTGTGTGACGAACCCCGCTTACGCCGACCGCTGCGCTTATCCGGTAACATATGCTCTGAGTCCAACCCGGTAGA 6600
 CACGACTTATGCCACTGACAGGAGCCACTGGTAACAGGATAGCAGAGCGAGGATGTAGGCGGTGCTACAGAGTCTTGAAGTGGTGGCTTAACCTAG 6700
 GCTACACTAGAAGGACATTTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAGAGGTTGGTAGCTCTTGTATCCGGCAACAAACACCGC 6800
 TGGTAGCGGCGTTTTTTGTTTGAAGCAGCAGATTACGCCAGAAAAAGGATCTCAAGAGATCTTTGATCTTTCTTACTGAACGGTGAATCCCA 6900
 CCGGATTCGCGCGCGGATTTCTCATGTTGACAGCTTATCATGATAGCTGGCGCTCTAGAACTAGTGTCCCAATGGTTAATTCGAGCTCGCC 7000
 _____ 3XP3-BYFP MARKER _____>
 CCGGATCTAATTCAATTAGAGACTAATTCAATTAGAGCTAATTCAATTAGAGCTCAAGCTTATCGATTTCGAACCCCTCGACCGCCGGAGTATAAATGA 7100
 _____ 3XP3-BYFP MARKER _____>
 GCGGCTTCTGCTACGGAGCGACATTTCAATTCAACAGCAAGTGAACACCTGCTAAGCGAAGGCTAAGCAATAAAGAGCGCAGCTGAACAGCTA 7200
 _____ 3XP3-BYFP MARKER _____>
 AACAAATCGGGTACCGCTAGAGTCGACGGTACGATCCACCGTCCCGCACCATGGTGAAGAGGGCGAGGAGCTGTTACCGGGGTGGTGCCCATCTGCT 7300
 _____ 3XP3-BYFP MARKER _____>
 CGAGCTGGACGGCGACGTAAACGGCCAGCTTACAGCTGTCCGCGCAGGGCGAGGCGGATGCCACCTACGGCAAGCTGACCTGAAGTTTCATCTGACCC 7400
 _____ 3XP3-BYFP MARKER _____>

FIG. 12(B) cont.

7500
ACGGGCAAGCTGCCCCGTCCTGGCCACCTCTGTGACCACTTCGGGTACGGCTGAGTGGTTCGCCCCGTACCCCGACCATGAGCAGCAGCACT
3XP3-EYFP MARKER

7600
TCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGTTCCAGGG
3XP3-EYFP MARKER

7700
CGACACCTGCTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCTGCGGCGACAGCTGAGTACAACACAGCCACAC
3XP3-EYFP MARKER

7900
GTCTATATCATGGCCGACAAGCAGAAAGACGGCATCAAGGTGAAGTTCAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACC
3XP3-EYFP MARKER

7900
AGCAGAACACCCCCATCGCGGACGGCCCCGTGCTGCTGCCCAACCACTACCTGAGCTACCACTCCGCCCTGAGCAAAAGACCCCAACGAGAGCGCGA
3XP3-EYFP MARKER

9000
TCACATGGTCTCTGCTGAGTTCGTGACCGCGCGCGGGTCACTCTCGGCATGAGCAAGCTGTACAAGTAAAGCGCGCGACTCTAGATCATAATCAGCC
3XP3-EYFP MARKER

8100
ATACCACATTGTGAGAGGTTTACTTCTTAAAAAACCCTCCACACCTCCCGCTGAACCTGAAACATAAAATGAATGCAATTGTGTGTTAACTTGT
3XP3-EYFP MARKER

8200
TATTGAGCTTATAATGTTTCAAAATAAGCAATAGCATCAAAATTTCACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTTGTCCAAACTC
3XP3-EYFP MARKER

8300
ATCAATGTATCTTAAAGCTTATCGATACGCGTACGGCACTAGTGGATCCCATCGCTCAATTTACGCGATGATTATCTTTAAGGTACGTACAAATATGATT
3XP3-EYFP MARKER < LEFT TERMINAL REPEAT

8400
ATCTTTCTAGGGTTAATCTAGCTGCGTGTCTGCGCGGTGTCGAGCACTCTCATCTGCTCCATCACGCTGTAAAAACACATTTCACCGCGAGTCTGCCCCG
<

8500
TCCTCCACGGGTTCAAAACGTGAATGAACGAGGCGCGCCCGCGGGTAATCTACGGGATATCCATGTCCATTTCGCGGCATCCAGCCAGGATACCCGT

9600
CCTCGCTGACGTAAATATCCAGCGCCGACCGCTGTCAATTAATCTGCACACCGGACGCGAGTTCCGGCTGTGCGCGGTATTTGTTCCGGGTTGCTGATGCG

8700
CTTCGGGCTGACCATCCGGAAGTGTGTCCGAAAAAGCCGCGACCACTGGTATCCAGGTGGCTGAAACGAGTTACCGTTAAAGGCGGTGATGGCC

8800
ACACCTTCCGGAATCATGATGATAACGTGCGTTTTCGCTCAAGTCAATGACGAGCACTCATCTCGGCAACTCTTTCCATGCGCGCTTCAAGCTCGC

8900
GGGAAAAGGACCGGGCTTCTTCTCCCGATGCCCCAGATAGCGCCAGCTTGGGCGATGACTGAGCCGGAAGAAAGACCCGACGATATGATCTGATGCG
CTAGATTAAACCTAGAAAGATAGTCTGCGTAAATTTGACGCGATGGGATCCCCCGGCTGCGAGGAATTCGATATCAAGCTTATCGATACCTCGAAGCTT
< RIGHT TERMINAL REPEAT

(SEQ ID NO: 48)

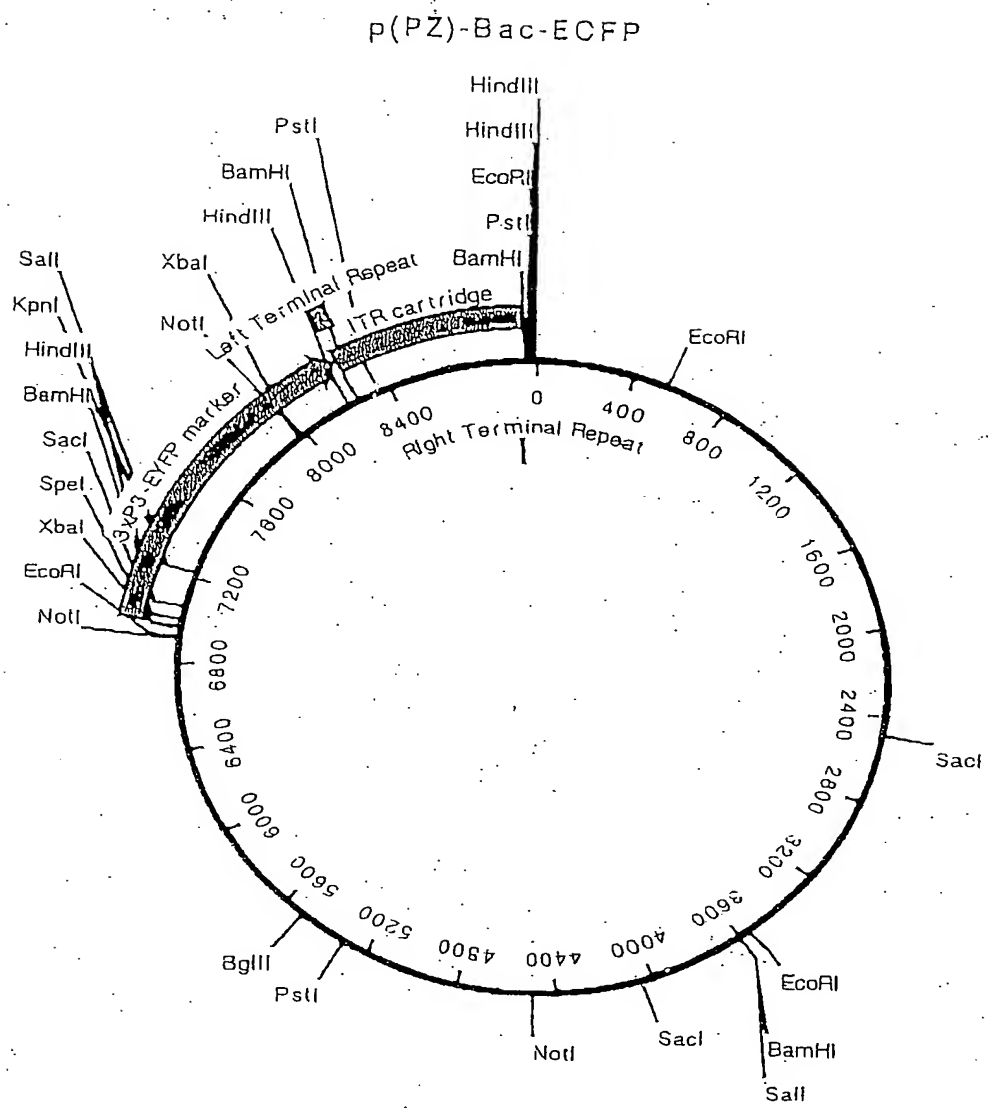


FIG. 13 (A)

100
ACCGAAGTATACACTTAAATTCAGTGCACGTTTGGCTTGTGAGAGGAAAGGTTGTGTGCGGACGAATTTTTTTTGAACAACTAACCCCTACGTGGAT
200
AAAAAAAATGAAATATTGCAAAATTTTGTGCAAGCTGTGACTGGAGTAAAAATAATTCACGTGCCGAAGTGTGCTATTAGAGAAATTTGGGGAGCA
300
GAGCCTTGGGTGACGCTTGGTGAAACTCCCAATTTGTGATACCACTTTAATGATTCGCAGTGGAGGCTGCACCTGCAAAAGGTCAGACATTTAAA
400
AGGAGGCGACTCAACGCAGATGCCGTACCTAGTAAAGTATAGAGCCTGAACAGAAAGATAAAGAGGCTATACAGTGGGAGTACACAAACAGAGT
500
AAGTTTGAATAGTAAAAAAATCATTTATGTAAACAAATACGTGACTGTGCGTTAGGTCCTGTTTATTGTTAATGAATAAGAGCTTGAGGGAAAAA
600
TTCTACTTTTGAGTACGAATGCGTTCGTTAGAGCAGCAGCCGAATTCACCTGGCCGTCGTTTACAACGTCGTGACTGGGAAAACCTGGCGTTACCCA
700
ACTTAATCGCCTTGACGACATCCCCCTTTGCCAGCTGGCGTAATAGCGAAGAGGCGCGACCGATCGCCCTTCCCAACAGTTGGCGAGCCTGAATGCG
800
GAATGGCGCTTTGCTTGGTTCCCGGCACCAGAAGCGGTGCGGAAAGCTGGCTGGAGTGGCATCTTCCTGAGGCCAATACTGTCTGCTCCCTCAAACT
900
GGCAGATGCACGTTACGATGCGCCATCTACACCAACGTAACTATCCATTACGGTCAATCCGCCCTTTGTTCCACGGAGATCCGACGGGTTGTTA
1000
CTCGCTCAATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGGCAATTTATTTTGAAGCGGTTAACTCGGCGTTTCATCTGTGGTGAACGGG
1100
CGCTGGGTGCGTTACGGCCAGGACAGTTCGTTTGGCTGTGAATTTGACCTGAGCGCATTTTACGCGCCGGAGAAAACCGCCTCGCGGTGATGGTGTCTG
1200
GTTGAGTGAACGCACTTATCTGAAGATCAGGATATGTGGCGGATGAGCGGCATTTCCGCTGACGTCCTGTTGTGCAATAAACCGACTACACAAATCAG
1300
CGATTTCCATGTGCGCACTCGCTTTAATGATGATTTACGCGCGCTGTACTGAGGCTGAAGTTTCAGATGTGCGCGAGTTGCGTGACTACCTACGGGTA
1400
ACAGTTTCTTTATGGCAGGGTGAACCGCAGGTCGCCAGCGCGCCCTTTCCGCGGTGAATTTATGATGAGCGGTGGTGGTTATGCCGATCGCGTCA
1500
CACTAGCTCTGAACGTGAAAAACCGAAACTGTGGAGCGCGGAAATCCGAATCTCTATCTGTGCGGTGGTTGAAGTGCACACCGCCGACGGCAGCTGAT
1600
TGAAGCAGAAGCCTGCGATGTGCGTTTCCGCGAGGTGCGGAATGAATTTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTCGAGGCGTTAACCTG
1700
CAGGAGCATCTCTCTGATGCTCAGGTCATGGATGAGCAGACGATGGTGCAGGATATCTGCTGATGAAGCAGAACACTTTAACCCCGTGCCTGTT
1800
CGCATTTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGCGCTGTATGTGGTGGATGAAGCCTATTTGAACCCACGGCATGGTGCAT
1900
GAATCGTCTGACCGATGATCCGCGCTGGCTACCGGCTATGAGCGAAGCGGTACGCGAATGGTGCAGCGCGATCTAATCACCCAGTGTGATCATCTGG
2000
TCGCTGGGGAATGAATCAGGCCACGGCGCTAATCACGACGCGCTGTATCGTGAATCAATCTGTGATCTTCCCGCCCGGTGCAATATGAAGCGCGG
2100
GAGCCGACACCCAGGCCACCGAATTTATTTGCCGAGTACGCGCGCGTGGATGAAGACAGCCCTTCCCGGCTGTGCCGAATGGTCCATCAAAAAATG
2200
GCTTTGCTTACCTGAGAGACGCGCCGCTGATCTTTGGCAATACGCCACGCGATGGGTAAACAGTCTTTGGCGGTTTGGCTAAATACTGGCAGGCGTTT
2300
CGTCAGTATCCCCGTTTACAGGCGGCTTCTGCTGGGACTGGGTGGATCACTCGCTGATTAATATGATGAACACGGCAACCCGTTGGTCTGCTTACGGCG
2400
GTGATTTTGGGATAGCGCGAAGCATCGCCAGTCTGTATGAACGCTTGGCTTTTGGACCGCAGCGCGCATCCAGGCTGACGGAAGCAATACCA
2500
GCAGCAGTTTTCAGTTCCGTTTATCCGGGCAACCATCGAAGTGACAGCGAATACCTGTTCGCTCTAGCGATACGAGCTCTGCACTGGATGGTG

FIG. 13(B) cont.

2500
 GCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCCTCTGGATGTCGCTCCACAAAGTAAACAGTTGATTEAACTGCCCTGAACCTACCGCAGCCGGA
 2700
 GCGCCGGGCAACTCTGCTCACAATACCGTAGTGCACCCGAACGCGACCGCATGGTCAGAAAGCCGGGCACATCAGCGCCCTGGCAGCAGTGGCCTCTGGC
 2800
 GGAAAACCTCAGTGTGACGCTCCCCGCGCTCCACGCCATCCCGCATCTGACCACCAGCGAATGGATTTTTGCATCAGAGCTGGTAATAAGCCTTGG
 2900
 CAATTTAACCGCCAGTCTGGCTTTCTTTACAGATSTGGATTGGCGATAAAAAACAACTGCTGACGCCCTGGCGCATCAGTTCAACCCGTGACCGCTGG
 3000
 ATAACGACATTGGCGTAAGTGAAGCGACCCGCATTGACCTTAACGCTGGGTGCAACGCTGGAAGGCGCGGGCCATTACAGGCGGAAGCAGCGTTGTT
 3100
 GCAGTGCACGGCAGATACACTTGTCTGATGCGGTGCTGATTACGACCGCTCAGCGGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGGAAAACCTAC
 3200
 CGGATTGATGGTAGTGGTCAAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCGCGCGGAGTTGGCCTGAACCTGCCAGCTGGCGC
 3300
 AGGTAGCAGAGCGGGTAAACTGGCTCGGATTAGGGCGGCAAGAAAACATATCCGACCGCCTTACTGCGCGCTGTTTTGACCGCTGGGATCTGCCATTGTC
 3400
 AGACATGTATACCCCGTACGCTCTTCCCGAGCGAAAACGGTCTGCGCTGGCGGACGCGCAATTGAATATGGCCACACCACTGGCGCGGGCAGCTTCCAG
 3500
 TTCAACATCAGCCGCTACAGTCAACAGCAACTGATGGAACACGCGCATCGCCATCTGCTGACCGCGGAAGGACATGGCTGAATATCGACGGTTTCC
 3600
 ATATGGGGATTGGTGGCGACGACTCCTGGAGCCCCGTCAATATCGCGGAATTCAGCTGAGCGCGGCTGCTACCATTAACAGTTGGTCTGGTGTGCGGG
 3700
 ATCCGTCGACTAAGGCCAAAGAGTCTAATTTTTGTTCAATGGGTTATACATATGGGTTATATATAAGTTTGTTTTAAGTTTTTGAGACTGATAAG
 3800
 AATGTTTCGATCGAATATTCATAGAACAAATAGTATTACCTAATTACCAAGTCTTAATTTAGCAAAAATGTTATTGCTTATAGAAAAATAAATTAT
 3900
 TTATTGAAATTTAAAGTCACTTGTCAATTAAATGTCCTTGTAGACTTTTGAAGTCTTACGATACAAATTAGTATCTAATATACATGGGTTCAATCTACAT
 4000
 TCTATATTAGTGAATTTCTTTAGCTAGTAATACATTTAATTATATTCGGCTTTGATGATTTTCGATTTTTTCCGAACGGATTTTCGTAGACCCCTTT
 4100
 CGATCTCAATATGGCTCATTTTAATTGGATGGAGGCTCAGGAGAGCTCCACTTTTGAATTTCTGTTGCGAGACACCGCAITTTGAGCAGATAGCCGGAC
 4200
 ATCCGCTTTGGGAGATTTTCCAGTCTCTGTTGCAATTGGTTTTTCGGGAATGCGTTGCAAGCGCATACGCTCTATATCTCCGAACGGCGCTGGTTGACC
 4300
 CTAGCAATTTACATAGGATCAGCAGCAAAATTTGCTCTGCTTCATTGCCCCGAATCACAAGCAATCAGATGTCCCTTTTGGTTACGATGGATATTCAGGT
 4400
 GCGAACCGCACACAAGCTCTCGCCGACACTCCACACTGATATGGTGGCTCGCCCTGTGGCGCCGATATGATCTTAAGGTCGTTGGACTGCACAAAG
 4500
 CTCTTGTGACATTTTTCAGGAGTACGGCCTTTGACCCGTGTGCAATCGCATGTTGTCGCGCAGCTTGTCTGCGAAATAAATTTCTTGGAGCAGATGC
 4600
 GGCCGCCCGGGGTGGCGAAAGACTCCAGCATGAGATCCCGCGCTGGAGGATCATCCAGCCGCGCTCCCGGAAAACGATTCGAAAGCCCAACCTTTCAT
 4700
 AGAAGCGCGCGGTGGAATCGAAATCTCTGTGATGGCAGGTTGGCGCTGCGTGGTCTGGTCAATTCGAACCCCAAGTCCCCGCTCAGAAAGAACTGCTCAGA
 4800
 AGGCGATAGAGGCGATGCGCTCGGAATCGGGAGCGGGCTACCGTAAGCAGCAGGAGAGGCTCAGCCCATTCGCGCGCAGGCTCTTCAGCAATATCAC
 4900
 GGGTAGCCACGCTATGCTCTGATAGCGGTCCGCCACCCAGCCGCGCCAGTGCATGAATCCAGAAAAGCGGGCATTTCACCCATGATATTCGGCA
 5000
 GCAGGCATCCGCTATGGGTACGACGAGATCTCGCCGTGCGGCATGCGCGCTTGAAGCTGCGGAACGATTCGGCTGGCGGAGCCCTGATGCTTTCTG

Fig. 13(B) cont.

5100
 ICCAGATCATCTGATCGACAAGACCGGCTTCCATCCGAGTACGTGCTCGCTCGATGCEATGTTTCGCTTGGTGGTCEAATGGGACGGTAGCCGATCAA
 5200
 GCGTATGCAGCCCGCGCATTCGATCAGCCATGATGGATACTTTCTCGGACGGACCAAGGTGAATGACAGGAGATCTGCCCCGGGCACTTCGCCCAATAG
 5300
 CAGCCAGTCCCTTCCCGCTTCAGTGACAACGTCCAGSCACAGCTGCGCAAGGAACGCCGCTCGTGGCCAGCCACGATAGCCGCGCTGCGCTCGCTCTGCTGAGT
 5400
 TCATTGAGGGCACCGGACAGGTGCTCTTGACAAAAGAACCGGGCGCCCTGCGCTGACAGCCGAACACGGCGGATCAAGGACGCCGATTGTCTGTT
 5500
 GTGCCAGTCAATAGCCGAATAGCCTCTCCACCCAGCGCGCGGAGAACCTGCGTGCAATCCATCTTGTTCATCATGCGAAACGATCCTCATCTGTCTC
 5600
 TTGATCAGATCTTGATCCCTGCGCCATCAGATCCTTGCGGCAAGAAAGCCATCCAGTTTACTTTGCGGGCTTCCCAACCTTACCAGAGGGCGCCCA
 5700
 GGTGGCAATTCGGTTTGGTTTGGTCCATAAAACCGCCAGTCTAGCTATCGCCATCTAAGCCCACTGCAAGCTACCTGCTTTCTTTTGGCGTTGGCT
 5800
 TTTCCTTGTTCAGATAGCCAGTAGCTGAATTTCATCCGGGTTCAGCACCGTTTCTGCGGACTGGCTTTTACGTGTTCCGCTTCTTTAGCAGCCCTT
 5900
 GCGCCCTGAGTCTTGGGACGCTGAAGCTAATTCTAGTTATTAATTTTGTAAATCAGCTCATTTTAAACCAATAGGCCGAAATCGGCAAAATCC
 6000
 CTTATTAATCAAAAGATAGCCCGAGATAGGGTGAAGTGTCTTCAGTTTGGAAAGAGTCCACTATTAAAGAACGTGGAATCCACGCTCAAGGGCG
 6100
 AAAACCGTCTATCAGGGCGATGGCGGATCAGCTTATGCGGTGTGAAATACCGCACAGATCGCTAAGGAGAAATACCACATCAGGCGCTCTTCCGCTT
 6200
 CCTCGCTCACTGACTCGCTGCGCTCGGTCTGTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGCGGTAAATACGGTTATCCACAGATCAGGGGATAA
 6300
 CGCAGGAAAGACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCTAAAGAGCGCGCTTGTCTGCGCTTTTTCATAGGCTCCGCCCCCTGACGAG
 6400
 CATCAAAAATCAGCCTCAAGTCAAGGTGGCGAAACCGACAGGACTAAAGATACAGGCGTTCCTCCCTGGAAGCTCCCTCGTGGCTCTCTCTG
 6500
 TTCCGACCTGCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCAGCGCTGTAGGTATCTCAGTTCCGTGTA
 6600
 GGTGTTCCGCTCAAGCTGGGCTGTGTGACGAACCCCCGTTACGCCGACCGCTGCGCTTATCGGTAATATCGTCTTGAGTCCAAACCGGTAAAG
 6700
 CACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGAGGCGGTGCTACAGAGTTCCTGAAGTGGTGGCTAACTACG
 6800
 GCTACACTGAAGGACAGTATTGGTATCTGCGCTCTGCTGAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAAACAAACACCGC
 6900
 TGGTAGCGCGGTTTTTTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAGATCCTTGAATCTTTTCTTACTGATCGGTGATCCCCA
 7000
 CCGGAATTGCGGCGCGGAATTCATGTTTACAGCTTATCATCGATAGCTGCGCGCTCTAGAACTAGTGTTCACCAATGGTTAATTCGAGCTCGCC
 3XP3-BYFP MARKER
 7100
 CGGGATCTAATCAATTAGAGACTAATTCATTAGAGCTAATTCATTAGGATCCAGCTTATCGATTTGCAACCTCGACCGCCGGAATTAATAGA
 3XP3-BYFP MARKER
 7200
 GCGCTTCTGCTACGGAGCGCAATTCATTCAACAGCAAGTGAACGCTCGCTAGCGGAAAGCTAAGCAATAAACAAGCGCAGCTGAACAAGCTA
 3XP3-BYFP MARKER
 7300
 AACATCGGGTACCGCTAGAGTCGACGCTACATCCACCGCTCGCCACCATGCTGAAGGCGGAGGAGCTGTTACCGCGGCTGGTCCCATCTGCT
 3XP3-BYFP MARKER
 7400
 CGAGCTGGACGGGACATAACGGCCACAAATTCAAGCTGTCCGGCGAGGGCGAGGGGATGCCACCTACGGCAGCTGACCTGAAGTTCACTGCAAC
 3XP3-BYFP MARKER

FIG. 13(B) cont.

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ACCGGCAAGCTGCCCGTGGCCCTGGCCCAACCTCGTGACTACCTGACCTGGGGCTGCACTGCTTCAGCCGCTACCCCGACCATGAAGCAGCACGCT 7500
3XP3-EYFP MARKER
TCTTCAAGTCCGCCCATGCCCGAAGGCTACGTCCAGGAGCGCACCATTCTTCTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGG 7600
3XP3-EYFP MARKER
CGACACCTGCTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACATCAGCCACAAC 7700
3XP3-EYFP MARKER
GTCTATATCACCGCCGACAAGCAGAAGAACGGCATCAAGGCCAACTTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCGCGACCACTACC 7800
3XP3-EYFP MARKER
AGCAGAACACCCCATCGCGGACGGCCCCGTGCTGCTGCCGACAACTTACCTGAGCACCAGTCCGCGCTGAGCRAAGACCCCAACGAGAGCGCGA 7900
3XP3-EYFP MARKER
TCACATGGTCTGCTGGAGTTCGTGACCGCCCGGGGATCACTCTCGGCATGGAGGAGCTGTACAAGTAAAGCGGCGGACTCTAGATCATATCAGCC 8000
3XP3-EYFP MARKER
ATACCACATTTGTAGAGGTTTACTTGCTTTAAAAAAGCTCCGACAGCTCCCGCTGACCTGAACATAAAATGAATGCAATTGTTGTTGTTAACTTGT 8100
3XP3-EYFP MARKER
TATTGACGCTTATAATGGTTACAAATAAGCAATAGCATCAAAATTCACAAATAAGCAATTTTTTCACTGCATTCAGTTGTGGTTTGTCCAAACTC 8200
3XP3-EYFP MARKER
ATCAATGTATCTTAAAGCTTATCGATACGGGTACGGCGCGCTAGGCCGCGCGATTGGATCCCATGCGTCAATTTTACGCATGATTATCTTTAAGCTACG 8300
3XP3-EYFP MARKER < LEFT TERMINAL REPEAT
TCACATATGATTATCTTTCTAGGGTTAATCTAGCTGCTGTTCTGAGCATCTTCATCTGCTCCATCAGCTGTAAAAACACATTGACCC 8400
< LEFT TERMINAL REPEAT
GCGAGTCTGCCCGTCTCTCCAGGGTTCAAAAAGCTGAATGAACGAGGCGCGCCGCGGGTAACTCACGGGGTATCCATGTCCATTTCGCGGCATCCAG 8500
CCAGGATACCCGCTCTCGCTGACGTAATATCCAGCGCGCGACCGCTGTCAATACTGCACACCGGCACGGCAGTTCGGGCTGTGCGCGGTATGTTCCG 8600
GGTGTGCTGATGCGCTTCGGGCTGACCATCCGGAATGTGTCCGGAAGAGCCGCGACGAAGTGTATCCAGGTGGCCTGAACGAACAGTTTACCCTTAAA 8700
GGCGTGCATGGCCACACCTTCCCGAATCATCATGGTAAACGTGCGTTTTCGCTCAACGTCATGACGAGCAGTCACTCTCGGCAAACTCTTTCCATGCC 8800
GCTTCAACCTTCGCGGGAAAAGGCACGGGCTTCTTCTCCCGATGCCAGATAGCGGCAGCTTGGCGGATGACTGAGCCGAAAAGACCCGAGCATAT 8900
GATCCTGATGACGCTAGATTAAACCTAGAAAGATAGTCTGCGTAAATTCAGCATGGGATCCCGGGCTGCAGGAATTTCGATATCAAGCTTATCGATA 9000
< RIGHT TERMINAL REPEAT
CCGTGGAAGCTT (SEQ ID NO: 49)

```

p(PZ)-Bac-EGFP

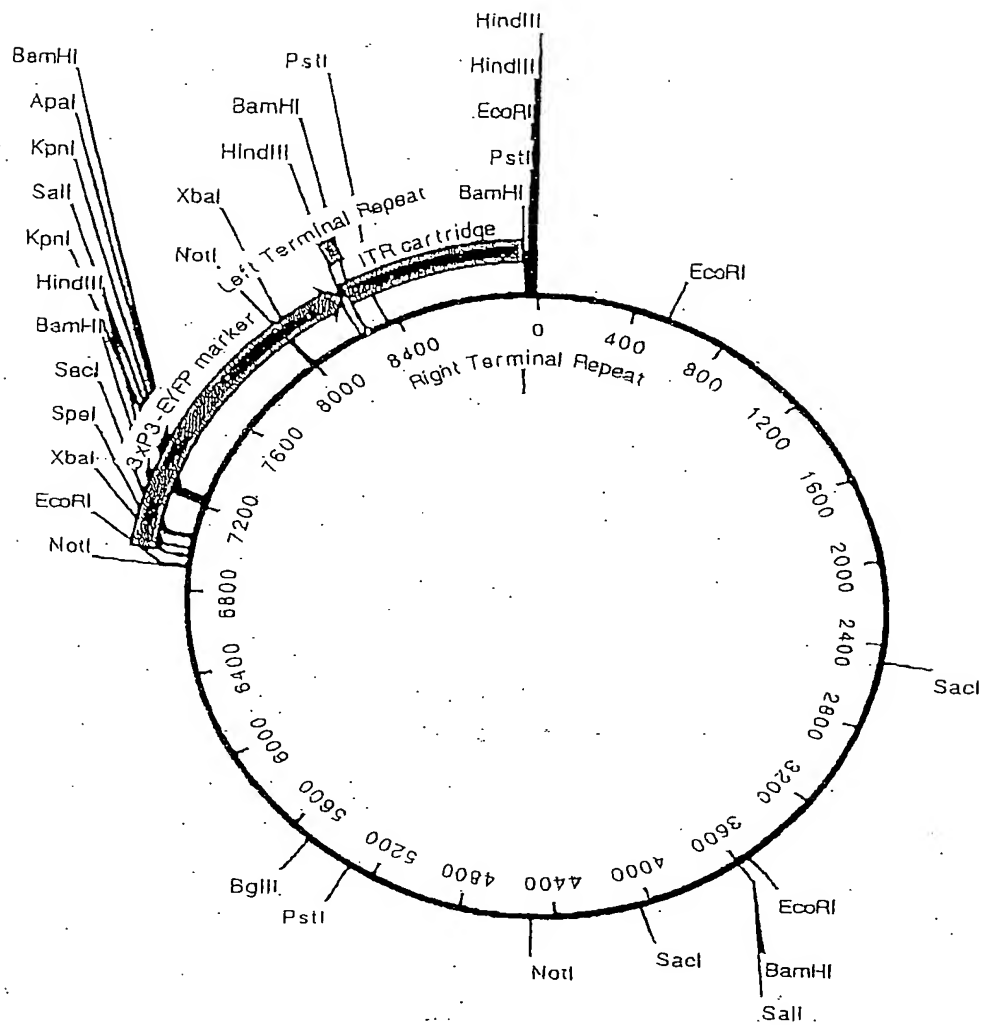


FIG. 14 (A)

100 ACCGAAGTATACACITAAATTCAGTGCACGTTTCTTGTGAGAGGAAAGGTTGTGTGTCGACGAAATTTTGTGAAAACATTAAACCTTACGTGGAAT
200 AAAAAAAAAATGAATAATTGCAAAATTTGCTGCAAAGCTGTGACTGAGTAAATAATTCACGTGCCGAAGTGTGCTATTAAAGAGAAAATTGTGGCAGCA
300 GAGCCITGGGTGCAGCCTTGGTGAAAACCTCCAAATTTGTGATACCACTTTAATGATTTCGAGTGGAGGCTGCACCTGCAAAAGGTGAGACATTTAAA
400 AGGAGGCGACTCAACCGAGATGCCGTACCTAGTAAAGTGAAGAGCCCTGAACCAGAAAAGATAAAAGAGGCTATACAGTGGGAGTACACAACAGAGT
500 AAGTTGAATAGTAAAAAAATCATTTATGTAACAATAACGTGACTGTGCGTTAGGTCCTGTTTATTGTTAATGAAAATAAGAGCTTGAEGGAAAAA
600 TTCGTACTTTGGAGTACGAAATGCGTCGTTTAGAGCAGCAGCCGAATTCAGTGGCCGTGTTTTACAACGTCTGACTGGGAAAACCTGGCGTTACCCA
700 ACTTAATCGCCTTGCAGCACATCCCCCTTTCCGCGAGCTGGCGTAATAGCGAAGAGGCGCCGACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGC
800 GAATGGCGCTTTGCTGCTTTCCGCGACCGAAGCGGTGCGGAAAGCTGGCTGGAGTGGATCTTCTGAGGCGGAACTGTGCTGCTCCCTCAAACCT
900 GGCAGATGCACGGTTACGATGCGCCCATCTACCAACGTAACCTATCCATTACGGTCAATCGCCGCTTTGTTCCACGGAGAAATCCGACGGGTTGTTA
1000 CTCGCTCACATTAAATGTTGATEAAAGCTGGCTACAGGAAGGCGAAGCGAATTAATTTGATGGCGTTAACTCGGCGTTTCATCTGTGGTGCACCGG
1100 CGCTGGGTGCTTACGGCCAGGACAGTCTGTTGCGCTCTGAATTTGACCTGAGCGCATTTTACGCGCGGAGAAAACCGCCCTCGCGGTGATGGTCTGC
1200 GTTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGATGAGCGGCATTTTCCGTGACGTCTGTTGCTGCAATAACCGACTACACAATCAG
1300 CGATTTCGATGTGCTCACTCGCTTTAATGATGATTTAGCCGCGCTGTACTGGAGGCTGAAGTTCAAGATGTGCGGCGAGTTGCGTGACTACCTACGGTA
1400 ACAGTTTCTTTATGGCAGGGTGAACCGCAGGTGCGCCAGCGGACCGCGCTTTGCGCGTGAAATATCGATGAGCGTGGTGGTTATGCGGATCGCGTCA
1500 CACTACGTCTGAACGTGGAACCCGAAACTGTGGAGCGCGAATCCCGAATCTCTATCGTGGCGGTGGTTGAAGTGCACACCGCGGACGGCAGCTGAT
1600 TGAAGCAGAAGCCTCGATGTGGTTTCCGCGAGGTGCGGATTAATAATGGTCTGCTGCTGCTGACGCGAAGCGGTGCTGATTGAGGCGTTAACGT
1700 CACGAGCATCATCTCTGCAATGCTCAGGTGATGATGAGCAGAGATGGTGCAGGATATCTCTGCTGATGAAGCAGAACACTTTAACGCCGTGCGCTGT
1800 CGCATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGCCTGTATGTGGTGGATGAAGCCAATATTGAACCCACGGCATGGTGCATAT
1900 GAATCGTCTGACCGATGATCCGCGCTGGCTACCGCGATGAGCGAAGCGGTACGCGAATGGTGCAGCGGATCGTAATACCCGAGTGTGATCATCTGG
2000 TCCTGCGGAATGATCAGGCGACGGCGTAATCAGCGCGCTGTATCTGATCAAAATCTGTGATCTTCCGCGCGGTGCAATGAGGCGGCG
2100 GAGCCGACACCGCGCACCGATATATTGCGCGATGTACCGCGCTGGATGAAGCAGCGCTTCCGCGCTGTGCGGAATGGTCCATCAAAAATG
2200 GCTTTGCTACCTGAGAGACCGCGCGCTGATCTTTGCGAATACCGCGCGGATGGGTACAGTCTTGGCGGTTTGGCTAAATACTGGCAGCGGTT
2300 CGTCAGTATCCCGCTTACAGGCGCGCTTCTGCTGGGACTGGGTGATCAGTCCGCTGATTAAATATGATGAAAACGGCAACCGGTGGTGGCTTACGGC
2400 GTGATTTTGGCGATACCGCGGACGATCGCCAGTTCTGTATGAACGCTGCTGTTTGGCGACCGCGCGCATCCAGCGGTGACCGAAGCAACACCA
2500 GCAGCAGTTTTCAGTTCCGTTTATCCGCGCAACCATCGAAGTACCAAGCAATACCTGTTCCGTCTAGCGATAACGAGCTCTGCACTGGAGGTTG

FIG. 14(B) cont.

2600
 GCGCTGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCCTCTGGATGTCGCTCCACAAGGTAAACAGTTGATTTGACTGCTGAACTACCGCAGCCGAGA
 2700
 GCGCGGGCAACTCTGCTCAGGTACCGGTAGTGCAACCGAAGCGGACCGCATGCTCAGAAGCGGGCACTCAGCGCCTGGCAGCAGTGGCGTCTGGC
 2800
 GGAACCTCAGTGTGACGCTCCCGCGCGGTCCACGCCATCCCGCATCTGACCACCAGCGAATGGATTTTGCATCGAGCTGGGTAATAAGCGTTGG
 2900
 CAATTTAACCGCCAGTCAGGCTTTCTTTCAAGATGTGGATTGGCGATAAAAAAGAACTGCTGCGCGCTGCGCGATCAGTTACCCCGTGCACCGTTGG
 3000
 AATAAGCAATTGGCGTAAGTGAAGCGACCCGCAATTGACCCTAAGCGCTGGGTGCAACGCTGGAAGGCGCGGGCCATTACAGGCGGAAGCAGCGTTGTT
 3100
 GCAGTGCACGSCAGATACACTTGTGATGCGGTGCTEATLACGACCGCTCAGCGGTGCGAGCATCAGGGGAAAACCTTATTATCAGCCGGAAGACCTAC
 3200
 CGGATTGATGCTAGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGAATACCCGATCCGGCGCGGATTGGCCTGAATGCCAGCTGGCGC
 3300
 AGGTAGCAGAGCGGGTAAGTGGCTCGGATTAGGGCGCGAAGAAAATATCCCGACCGCCTTACTGCGCGCTGTTTTGACCGCTGGGATCTGCCATTGTC
 3400
 AGACATGTATACCCCGTACGCTCTCCGAGCGAAGACGGTCTGCGCTGCGGGAGCGCGGAATTGAATTATGCCCCACACAGTGGCGCGCGCACTTCCAG
 3500
 TTCAACATCAGCGCTACAGTCAACAGCAACTGATGGAACCGACCATCGCCATCTGCTGCACCGCGGAAGAGGCAATGGTGAATATCGACGGTTTCC
 3600
 ATATGGGGAATTGGTGGCGAGCTCTCGGACCGCGTCAGTATCGCGGGAATTCAGCTGAGCGCGGCTCGCTACCATTAACAGTTGGTCTGGTGTGCGGG
 3700
 ATCCGTCGACTAAGGCCAAGAGTCTAATTTTGTTCATCAATGGGTATAACATATGGGTTATATTATAAGTTTGTTTAAGTTTGTGAGACTGATAG
 3800
 AATGTTTCGATCGAATATTCATAGACAACTAGTATTACCTAATTACCAAGTCTTAATTTAGCAAAAATGTTATTGCTTATAGAAAAATTAATTA
 3900
 TTATTTGAAATTTAAAGTCAACTTGTCAATTAATGTCTGTGTAAGCTTTTGAAAGTCTTACGATACAAATAGTATCAATATACATGGGTTCAATCTACAT
 4000
 TCTATATTAGTGAATTTCTTTAGCTAGTAACTACATTTTAATTAATTCGGCTTTGATGATTTTCTGATTTTTCGGAACGGATTTTCGTAGACCCCTTT
 4100
 CGATCTCATAATGGCTCAITTTATTGCGATGGACGGTCAGGAGAGCTCCATTTTGAATTTCTGTTTCGAGACACCGCAATTTGTAGCACATAGCCGGAC
 4200
 ATCCGGTTTGGGGAGATTTCCAGTCTCTGTTGCAATTGGTTTTCGGGAATGCGTTGCGAGCGCATACGCTCTATATCTCCGAACGGCGCTGGTTGAGC
 4300
 CTAGCATTTACATAAGGATCAGCAGCAAAATTTGCTCTGCTTCATTGCCCGGAATCAGCAATCAGATGTCCCTTTGCGGTTACGATGGATATTAGGT
 4400
 GCGAACCGCACCAAGCTCTCGCCGACACTCCACACTGATATGCTGCTCGCCCTGTGGCGCGCATATGGATCTTAAGGTCGTTGGACTGCACAAAG
 4500
 CTCTTGTGCAATTTTGCAGGAGTTCGGCTTTGACCGGTGTGCAATCGCATGTGTGCGCGCAGCTTGTCTGCGAAATAAATCTTTTGGAGCAGATGC
 4600
 GGCCGCGCGGGGTGGCGAAGAACTCCAGCATEAGATCCCCGCGCTGAGGATCATCCAGCGCGCGTCCCGGAAAAGCAATTCGGAAGCCCAACCTTTCA
 4700
 AGAAGGCGCGGGTGAATCGAAATCTGCTGATGCGAGGTTGGGCGTGGCTTGTGCTGGTCAATTCGAAACCCAGAGTCCCGCTCAGAAAGAACTGCTCAGA
 4800
 AGGCGATAGAAGCGGATGCGCTCGAATCGGAGCGGGCATACCGTAAGCAGAGGAAGCGGTGAGCCCATTCGCGCGCAGGCTCTTCAGCAATATCAC
 4900
 GGATAGCCACCGCTATGCTCTGATAGCGGTCCGCCACACCGAGCGGGCCACAGTGCATGAATCCGAAAGAGCGGCCATTTCCACCATGATATTGCGCAA
 5000
 GCAGGCATCGCCATGGGTACGACGAGATCCTTCCGCTGGGCGATGCGCGCTTGAGCCTGCGCAACAGTTCGCGCTGGCGCGGCGGCTGATGCTCTTCG

FIG. 14(B) cont.

TCCGATCATCTGATCECAAGACCGGCTTCCATCCGATACGTCTCGCTCGATGCGATGTTTCGCTTGGTGGTCGAATGGGCAGGTAGCCGGATCAA 5100
 GCGTATGCAAGCCGCGCATTCATCAGCCATGATGGAIACTTTCTGSSCAGGACCAAGGTGAGATGACAGAGATCTCTGCCCCGCACTTCGCCCAATAG 5200
 CAGCCAGTCCCTTCCCGCTTCAGTGAACCGTCGAGCACAGCTGCGCAAGGAACCCCGTCTGTGGCCAGCCACGATAGCCGCGCTGCGCTCGTCTGAGT 5300
 TCATTGAGGCAACCGGACAGGTCTGCTTTGACAAAAAGAACCGGGCGCCCTGCGCTGACAGCCGGAACACGGCGGCATCAGAGCAAGCCGATTGTCTGT 5400
 GTGCCCACTCATAGCCGAATAGCCTCTCCACCCAAAGCGCCCGGAGAACCTGCGTGCAATCCATCTTGTTCATTCATGCGAAACGATCCTCATCTGTCTC 5500
 TTGATCAGATCTTGATCCCCCTGCGCCATCAGATCCTTGGCGGCAAGAAAGCCATCCAGTTTACTTTGCAAGGGCTTCCCAACCTTACCAGAGGGCGCCCCA 5600
 GCTGGCAATTCGGTTGCTTGTCTGTCATAAAACCGCCAGTCTAGCTATCGCCATGTAAGCCCACTGCAAGCTACCTGCTTTCTCTTTGCGCTTCCGT 5700
 TTTCCCTTGTTCAGATAGCCAGTAGCTGACATTCACTCGGCGTCAGCACCGTTTCTGCGGACTGGCTTTCTAGCTGTTCGCTTCCCTTTAGCAGCCCTT 5800
 GCGCCCTGAGTGCTTCCGCGAGCGTGAAGCTAATTCATGTTATTAATTTTGTAAATCAGCTCATTTTTAAACCAATAGGCGGAATCGGCAAAATCC 5900
 CTTATTAATCAAAAGAAATAGCCCGAGATAGGGTGAAGTGTGTTCAGTTTGGAAACAGAGTCCACTATTAAGAACCTGGACTCCACGTCAAAGGGCG 6000
 AAAAACGCTCTATCAGGGCGATGGCCGATCAGCTTATGCGGTGTGAATAACCGACAGATGCGTAAGGAGAAAATACCGCATCAGGCGCTCTTCCGCTT 6100
 CCTCGCTACTGACTCGCTGCGCTCGGTCTTCCGCTGCGCGAGCGGTATCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAGATCAGGGGATAA 6200
 CGCAGGAAAGACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAGAGCGCGCTTCTGCGGTTTTTCCATAGGCTCCGCCCGCCCTGACGAG 6300
 CATCAGAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTAATAAGATACCAGGCGTTTTCCCGCTGGAAGCTCCCTCGTGCGCTCTCCTG 6400
 TTCCGACCTTCCGCTTACCAGGATACCTGTCCGCTTCTCTCCTTCCGGAAGCGTGGCGCTTTCTCATAGCTCAGGCTGTAGGTATCTCAGTTCGGTGT 6500
 GGTGCTTCTGCTCCAGGCTGGGCTGTGTGACGACCCCCGTTCCAGCCGACCGCTGCGCTTATCCGGTAATATCGTCTTGAAGTCCAAACCGGTAGA 6600
 CACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTCTTGAAGTGGTGGCCTAACTACG 6700
 GCTACACTAGAAGGACAGTATTGCTATCTCCGCTCTGCTGAAGCCAGTTACCTTCCGAAAAAGAGTTGGTAGCTCTTGAATCCGGCAACAAACACCGC 6800
 TGTAGCGGCGGTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAGGATCTCAAGAGATCCTTGAATCTTTCTTACTGAACGGTGAATCCCCA 6900
 CCGGAATTGCGGCGCGGAATTCTCATGTTTGACAGCTTATCATCGATAAGCTGGCCGCTCTAGAACTAGTGTTCACCAATGGTTAATTCGAGCTCGGC 7000
 _____ 3XP3-EYFP MARKER _____>
 CCGGATCTAATTCATTGAGGACTAATTCATTAGAGCTAATTCATTAGGATCCAGCTTATCGATTTCGAACCTCGACCGCGGAGTATAAATAGA 7100
 _____ 3XP3-EYFP MARKER _____>
 GCGGCTTCTGCTACGAGGCGACAATTCAATTCAAAAGCAAGTAAGTGAACGCTCGCTAGCGAAGGCTAGCAATAAAGCAGCGCAGCTGAACAGCTA 7200
 _____ 3XP3-EYFP MARKER _____>
 AACAAATCGGCTACCGCTAGAGTGAAGGTTCCCGGGGCCCGGATCCACCGTCCGACCATGCTGAGCAAGGCGGAGGAGCTGTTACCGGGGTGCTG 7300
 _____ 3XP3-EYFP MARKER _____>
 CCCATCTGCTGAGCTGAGCGGCGACATAAACGGCCAAATTCAGCGTGTCCGGCGAGGCGGAGGCGGATGCCAGCTACGGCAAGCTGACCTGAGT 7400
 _____ 3XP3-EYFP MARKER _____>

FIG. 14(B)

TCATCTGCACCCACCGCAAGCTGCCCCGTGCCCCGCCCCACCCCTCGTGACCACCCCTGACCTACGGCGTGCACTGCTTCAGCCGCTACCCCGACCCACATGA
 3XP3-EYFP MARKER 7500

GCAGCAGACTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAGGAGCGCACCATTCTTTCAGGACGACGGCAACTACAGACCCGCGCCGAGGTG
 3XP3-EYFP MARKER 7600

AAGTTCGAGGGCGACACCCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACTACA
 3XP3-EYFP MARKER 7700

ACAGCCACAACGTCATATCATGCGCGACAAGCAGAAGAAGCGGCTCAAGGTGAACCTCAAGATCCGCCACAACATCGAGGACGGCGAGCGTGCAGCTCGC
 3XP3-EYFP MARKER 7800

CGACCACTACCAAGCAGAACACCCCATCGGCGACGGCCCCGTGCTGCTGCCCCGACAACCACTACCTGAGCACCAGTCCGCCCTGAGCAAGACCCCAAC
 3XP3-EYFP MARKER 7900

GAGAAGCGCGATCAGATGCTCTGCTGGAGTTCGTGACCGCGCGGGGATCACTCTCGGCATGGACGAGCTGTACAGTAAGCGGCGCGGACTCTAGAT
 3XP3-EYFP MARKER 8000

CATATCAGCCATACCACTTTGTAGAGGTTTACTTGTCTTAAAAAACCTCCACACCTCCCCCTGAACCTGAAACATAAAATGAATGCAATTGTGTT
 3XP3-EYFP MARKER 8100

GTTAACTTGTATTATTCAGCTTATAATGGTTACAAATAAAGCAATAGGATCACAATTTCACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTT
 3XP3-EYFP MARKER 8200

TGTCCAAATCATCAATGTATCTTAAAGCTTATCGATACGCGTACGGCGCGCCTAGTGGATCCCATGCGTCAATTTTACGCGATGATTATCTTAAAGTAC
 3XP3-EYFP MARKER < LEFT TERMINAL REPEAT 8300

GTCAAAATATGATTATCTTTCTAGGTTAATCTAGCTGCGTGTTCGACGCTGTGAGCATCTTCATCTGCTCCATCAGGCTGTAAACACATTTGCAC
 < LEFT TERMINAL REPEAT 8400

CGCGAGTCTGCCGCTCTCCACGGGTTCAAAAACGTAATGAACGAGGCGCGCGCGCGGGTAACTCAGGGGTATCCATGTCCATTTCTGCGGCTCCCA
 8500

GCCAGGATACCCGCTCCTCGCTGACGTAATATCCAGCGCGCGCACCGCTGTCAATATCTGCACACCGGCACGGCAGTTCCGGCTGTGCGCGGTATGTTC
 8600

GGGTGCTGATGCGCTTCGGGCTGACCATCCGGAACCTGTGTCCGGAAGGCGCGACGAACTGGTATCCAGGTGGCCTGAACGAACAGTTACCGTTAA
 8700

AGGCGTGCATGCGCCACACCTTCCGAATCATCATGTTAAACGTGCGTTTTTCGCTCAACGTCAATGCAGCAGCAGTCATCCTCGGCAAACTCTTTCCATGC
 8800

CGCTTCAACCTCGCGGGAAGGCGACGGGCTTCTTCTCCCGATGCCAGATAGCGCCAGCTTGGGCGATGACTGAGCCGGAAGGACCCGACGATA
 8900

TGATCTGATGAGCTAGATTAAACCTAGAAAGTAGTCTGCTAAATTGACGATGGGATCCCCCGGGCTGCAGGAATTGATATCAAGCTTATCGAT
 < RIGHT TERMINAL REPEAT 9000

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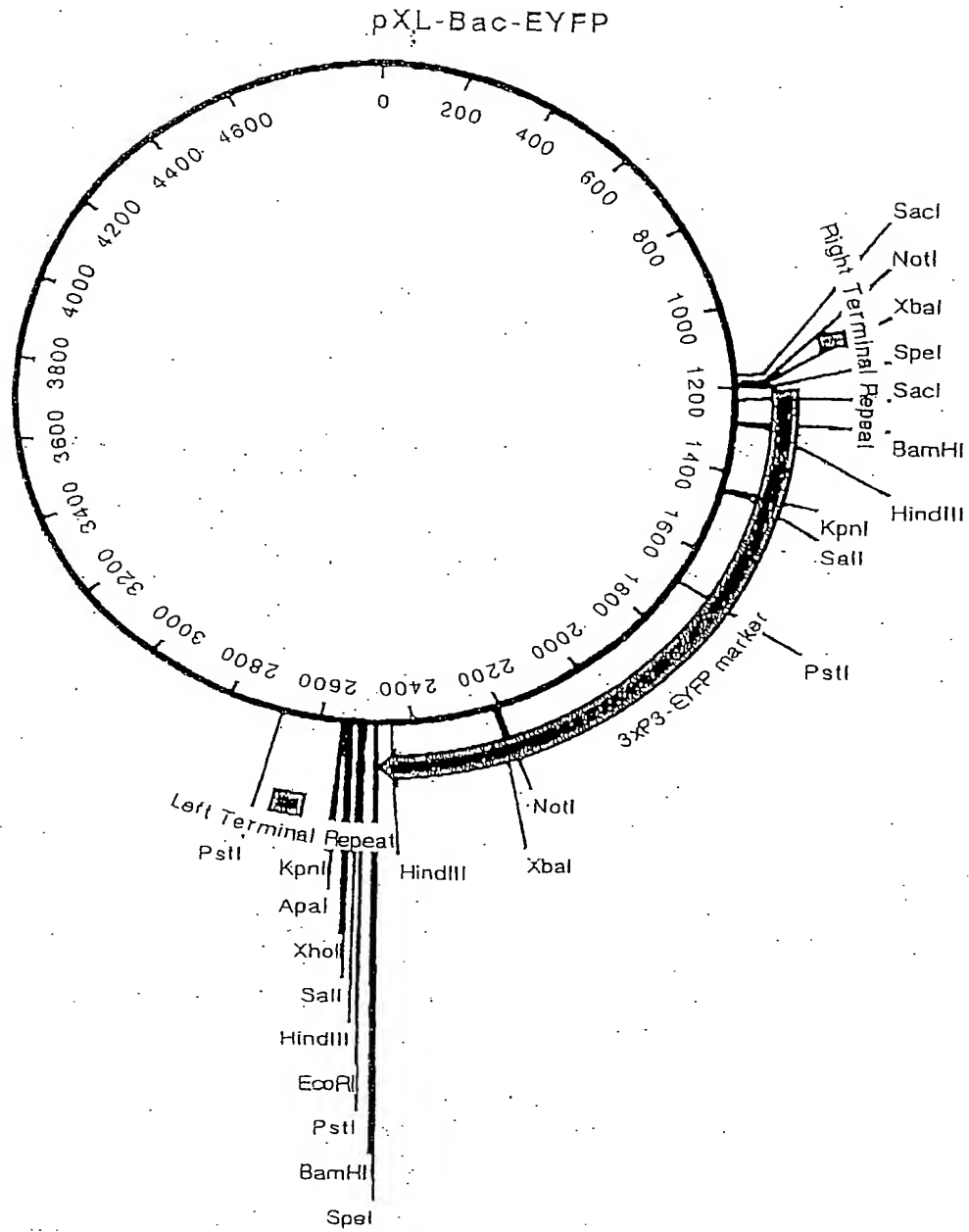


FIG. 15 (A)

FIG. 15(B)

pXL-Bac-EYFP

Sequence Range: 1 to 4951

```

100 CTAAATTGTAAGCGTAAATATTTTGTAAATTGCGTTAAATTTTGTAAATCAGCTCATTTTAAACCAATAGGCCGAAATCGGCATAATCCCTTAT
200 AATCAAAGAATAGACCGAGATAGGGTTGAGTGTGTTCAGTTTGAACAAGAGTCCACTATTAAAGAACGTGCACTCCAACGTCAAAGGCGAAAAA
300 CCGTCTATCAGGGCGATGCCCCACTACGTGAACCATCACCTAATCAAGTTTTTTGGGGTTCGAGGTGCCCTAAAGCACTAAATCGGAACCTAAAGGGAG
400 CCCCCGATTTAGAGCTTACGGGGAAAGCCGGCGAACGTGGCGAGAAAGGAAGGAAGAAAGCGAAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG
500 GTACGCTGCGCGTAACCAACACACCCGCCCGCTTAATGCGCGCTACAGGGCGCGTCCCATTCGCCATTTCAGGCTTCGCAACTGTGTGGGAAGGCGCAT
600 CGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGCGGATGTCTGCAAGGCGATTAAAGTTGGGTAAAGCCAGGGTTTTCCAGTCAACGACGTTG
700 TAAACGACGCGCAGTGAGCGCCCCCGCGGTAACCTACGGGGTATCCATGTCATTCTCGGGCATCCAGCCAGGATAACCGCTCTCTGCTGACGTAAT
800 ATCCGAGCGCGCACCGCTGTCTAATCTGCACACCGGCACGCGAGTTCGGGTGTGCGCGGTAITGTTGCGGTGCTGATGCGCTTCGGGGTGACCAT
900 CCGGAAGTGTGTCCGAAAAGCCGCGACGAAGTGGTATCCAGGTGGCGTGAAGCAACAGTTACCGTTAAAGGCGTGCATGCGCACACCTTCCCGAATC
1000 ATCATGTTAAAGCTGCGTTTTCTGCTCAACGTCAATGCAAGCAGTCAATCTCGGCAAACTCTTTCCATGCGCGTTCAACCTCGCGGAAAAGGCGACGG
1100 CTTCCTCTCCCGATGCCAGATAGCGCCAGCTTGGGCGATGACTGAGCCGGAAGAAAGACCCGAGATATGATCTGATGCAAGCTAGATTAAACCTAG
1200 AAGATAGTCTCGCTAAATTCAGSCAIGATCTAATTACCTCACTAAAGGGAACAAAAGCTGGAGCTCCACC GCGGTGGCGGCGCTCTAGACTAGT
< RIGHT TERMINAL REPEAT
1300 GTTCCCAATGTTAATTCGAGCTCGCCCCGGGATCTAATCAATTAGAGACTAATCAATTAGAGCTAATCAATTAGATCCAGCTTATCGATTTC
3XP3-EYFP MARKER
1400 GAACCTCGACCGCGGAGTATAATAGAGCGGCTTCGTCTACGGAGCGCAATTCAATTCAAACAGCAAGTGAACACGTCGTAGCGAAAGCTAAG
3XP3-EYFP MARKER
1500 CAATTAACAAGCGCAGCTGAACAAGCTAAACATCGGGGTACCGCTAGAGTGCAGCGTACGATCCACCGGTCGCCACCATGGTGAGCAAGGGCGAGGAG
3XP3-EYFP MARKER
1600 CTGTTACCGGGGTGGTGGCCATCTGCTGAGCTGGACGGCGACGTAACCGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTAGG
3XP3-EYFP MARKER
1700 GCAAGCTGACCTGAAGTTCTCTGCAACACCGGCAAGCTGCGCGTGGCGCCACCTCTGAGCACCTTCGGCTACGGCTGCAAGTGTCTGCGCCG
3XP3-EYFP MARKER
1800 CTACCCCGACCATGAAGCAGCAGGACTTCTTCAAGTCCGCCAIGCCGGAAGGCTACGTCCAGGAGCGCACCTCTTCTTCAAGGACGACGGCAACTAC
3XP3-EYFP MARKER
1900 AAGACCGCGCCGAGGTGAAGTTGAGGGCGGACCCCTGTTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGAGCGGCAACATCTGGGGCACA
3XP3-EYFP MARKER
2000 AGCTGGAGTACAACTACACAGCCACAAGCTCTATATCATGCGCGCAAGCAGAAAGAGCGGCATCAGGTGAAGTTCAGATCCGCCACACATCGAGGA
3XP3-EYFP MARKER
2100 CCGCAGCGTGCAGCTCGCGGACCACTACCAAGCGAAGCAGCCCATCGCGACCGCGCGTGTCTGCGCCGACAAACCTACCTGAGCTACGATCGCGCC
3XP3-EYFP MARKER

```

FIG 15(B) cont.

4300
CACTCTATAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGGCGAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTCTCCGCT
____ AMPICILLIN RESISTANCE _____>

4400
CGTCGTTTGGTATGGCTTCATTACAGCTCCGGTTCCTCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGTTAGCTCCTTCGGTCC
____ AMPICILLIN RESISTANCE _____>

4500
TCCGATCGTTGTGAGTAAGTTGCCCGCAGTGTCTACTCATGGTTAAGGACAGTGCATAATTCTCTACTGTCTAGCCATCCGTAAAGATGCTTT
____ AMPICILLIN RESISTANCE _____>

4600
TCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAAATAGTGTATGCGGCGACCGAGTTGCTCTTGGCCGGCGTCAATACGGGATAATACCGGCCAC
____ AMPICILLIN RESISTANCE _____>

4700
ATAGCAGAACTTTAAAGTGCTCATCATTGGAACGTTCTTCGGGGCGAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCAC
____ AMPICILLIN RESISTANCE _____>

4800
TCGTGCACCCAACTGATCTTCAGCATCTTTACTTTACCCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAGGGCG
____ AMPICILLIN RESISTANCE _____>

4900
ACACGGAAATGTTGAATACTCATCTCTTCTTTTCAATATTATGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATAATTGAATGTTATT
____ AMPICILLIN RESISTANCE _____>

AGAAAAATAAACAAATAGGGGTTCCGCGCACATTTCCCGAAAAGTGGCAC (SEQ ID NO: 51)

2200
CTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCTCTCTGAGTTCGTGACCCGCGCGGGAATCACTCTCGGCATGGACGAGCTGTACAAAGTAAA
3XP3-EYFP MARKER

2300
GCGGCCGCGACTCTAGATCATAATCAGCCATACCACATTTGTAAGAGGTTTACTTGTCTTAAAAAACCTCCACACCTCCCCCTGAACCTGAACAATAAA
3XP3-EYFP MARKER

2400
ATGAATGCAATTGTTGTTGTTAACTTGTATTGTCAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTCACAAATTAAGCATTTTTCAC
3XP3-EYFP MARKER

2500
TGCAATCTAGTGTGCGTTTGTCCAAACTCATCATGTATCTTAAAGCTTATCGATACGGTACGGCGCGCTAGGCACTAGTGGATCCCCCGGGCTGCAG
3XP3-EYFP MARKER

2600
GAATTCGATATCAAGCTTAACGATACCGTCGACCTCGAGGGGGGGCCCGGTACCAATTCGCCCTATAGTGAGTGTATTAAGATCAGCGGTAGATCCAT
<

2700
GCGTCAATTTTACGCAAGATTATCTTTACGGTACGTCACAAATATGATTATCTTTCTAGGGTTATCTAGCTGCGTGTCTGCGAGCGTGTGAGCATCTTC
LEFT TERMINAL REPEAT

2800
ATCTGCTCCATCACGCTGTAAAAACACATTTCACCGCGAGTCTGCCCCGTCTCCACGGGTTCAAAAACGTGAATGAACGAGGCGCGCTTGGCGTAATCAT

2900
GGTCATAGCTGTCTTCCTGTGTGAATTTGTTATCCGCTCACAATTCACACACATACGAGCGCGGAAGCATAAAGTGTAAAGCCTGGGGTCCCTAATGAGT

3000
GAGCTAACTCACATTAATTCGCTTGCCTCTACTGCCCCCTTCCAGCTGGGAACCTGTCTGTCAGCTGCATTAAATGAATCGGCCAACGCGCGCGGGAGA
>ColEI origin

3100
GGCGGTTTGCGTATTGGCGGCTCTTCCGCTTCTCTGCTCACTGACTGCTGCTGCTCGGTCTGTCGGGTGCGGCGAGCGGTATCAGCTCACTCAAAGCGCG

3200
TAATACGGTTATCCACAGATCAGGGGATAACGCAAGGAAGAATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGC

3300
GTTTTTCATAGGCTCGCCCCCTGACGAGCATCAAAAATCAGCGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGCGCTTT

3400
CCCCCTGGAAGCTCCCTCGTGCCTCTCTGTTCCGACCCCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATA

3500
GCTCAGCTGTAGTATCTCAGTTCGGTGTAGGTCTTCGCTCCAGCTGGGCTGTGTGACGAACCCCGCTTCAGCCGACCGCTGCGCTTATCCGG

3600
TAATATCGCTTTGAGTCCAAACCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTCAGAGAGCGAGGTATGTAGGCGGTGCT

3700
ACAGAGTTCTTGAAGTGGTGGCTTAACCTACGGCTACACTAGAAGGACAGTATTGGTATCTCGCGCTCTGCTGAAGCCAGTTACC TTCGAAAAAGAGTTG

3800
GTAGCTCTTGATCCGGCAAAACAAACCAACCGCTGGTAGCGGTGGTTTTTTTGTTTTGCAGGAGCAGATTACGGCGAGAAAAAAGGATCTCAAGAGATCC

3900
TTTGATCTTTTCTACGGGCTCTGACGCTCAGTGGAAACGAAACTCACGTTAAGGGATTTTGGTCAATGAGATTATCAAAAAGGATCTTACCTAGATCTTT

4000
TTAAATTAATAATGAAGTTTAAATCAATCAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACTTCTCTGAGCA
AMPICILLIN RESISTANCE

4100
TCTGCTATTTCTGTCATCCATAGTTGCGCTGACTCCCGCTGCTGTGATTAATACGATACGGCGAGGCGTTACCATCTGCGCCCAAGTGTGCAATGATAC
AMPICILLIN RESISTANCE

4200
GCGAGACCCAGCGCTCACCGGCTCCAGATTATACGCAATAAACGAGCCGAGCGGCGGAGGCGAGAGTGGTCTGCACTTTATCCGCTCTCATC
AMPICILLIN RESISTANCE

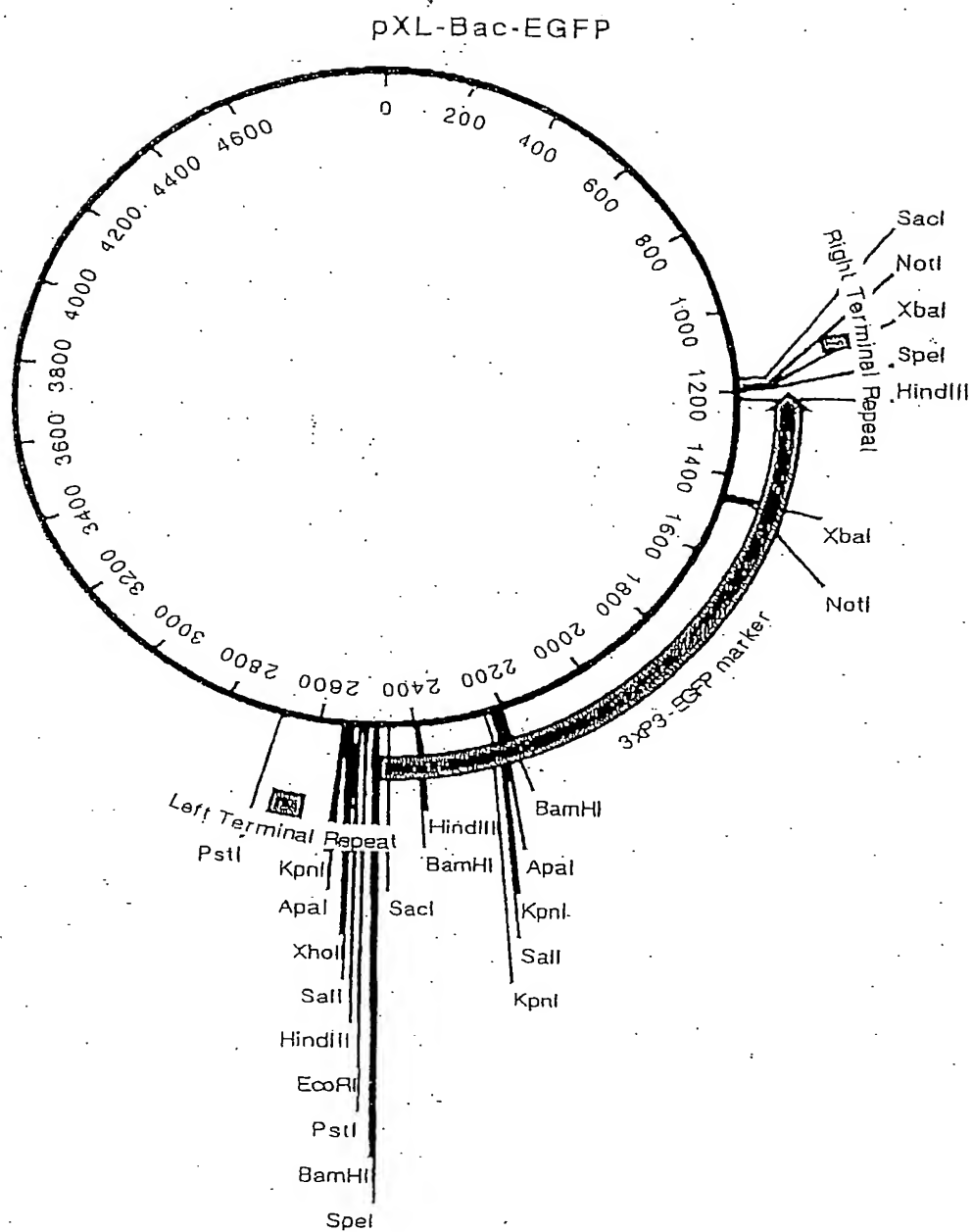


FIG. 16 (A)

Fig. 16(B)

pXI-Bac-EGFP

Sequence Range: 1 to 4952

```

CTAAATTGTAAAGCGTAAATATTTTGTAAATTCGCGTAAATTTTGTAAATCAGSTCATTTTAAACCAATAGGCCGAAATCGGCAAAATCCCTAT 100
AAATCAAAGAATAGACCGAGATAGGGTTGAGTGTGTTCAGTTTGAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGAAAAA 200
CGGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCTATCAAGTITTTTGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCCTAAGGGA 300
CCCCCGATTAGAGCTTGACGGGGAAAGCCGGCGAACGTGCGGAGAAAGGAAGGAAGAAAGCGAAGAGCGCGGCGCTAGGGCGCTGGCAAGTGTAGCG 400
GTCACGCTGCGCGTAACCAACACACCGCCGCGCTTAATGCGCGCTACAGGGCGCGTCCCATTCGCCATTGAGGCTGCGCAACTGTTGGGAAGGGCGAT 500
CGGTGCGGGCCCTCTTCGCTATACGCCAGCTGGCGAAAGGGGAATGTGCTGCAAGGGCGATTAGTTGGGTAAACCCAGGGTITTCACAGTCACGAGCTG 600
TAAACGACGGCCAGTGAGCGCGCCCGCGGTAACTACGCGGTATCCATGTCCATTTCGCGCATCCAGCCAGGATACCCGCTCTCGCTGACGTAAT 700
ATCCGAGCGCGCACCGCTGTCTAATCTGACACCGCGACGGCAGTTCGCGCTGTGCGCGGTATTGTGCGGGTGTCTGATCGCGCTTCGGGCTGACCAT 800
CCGGAACGTGTCTCCGGAAGCGCGGACGAATGGTATCCAGGTGGCTGAACGAACAGTTACCGTTAAAGGCGTGCATGGCCACACCTTCCCGAATC 900
ATCATGGTAAACGTGCGTTTTCGCTCAACGTCAATGACAGCAGCTATCCTCGGCAAACTCTTTCCATGCGCGCTTCAACCTCGCGGGAAGGACGCGG 1000
CTTCTCTCTCCCGATGCCAGATAGCGCCAGCTTGGGCGATGACTGAGCGGAAAAAGACCCGACGATATGATCTGATGACGCTAGATTAACCTAG 1100
< RIGHT TERMINAL REPEAT >
AAAGATAGCTCTCGTAAATTTGAGCGATGATCTAATTAACCTCACTAAAGGGAACAAAGCTGGAGCTCCACCGCGGTGGCGCGCGCTCTAGAACTAGT 1200
< 3XP3-EGFP MARKER >
GCCGTACGCGTATCGATAGAGCTTTAAGATACATTGATGAGTTTGGACAACACCACTAGAAATGCAATGAAAAAATGCTTATTTGTGAAATTTGTAT 1300
< 3XP3-EGFP MARKER >
GCTATTGCTTTATTGTAAACATTATAAGCTGCAATAAACAAGTTAAACAACAATGCAATTCATTATGTTTCAGGTTCAAGGGGAGGTGTGGGAGG 1400
< 3XP3-EGFP MARKER >
TTTTTAAAGCAAGTAAACCTCTACAAATGTGATGCTGATTATGATCTAGAGTCCGCGCGCTTACTTGTACAGCTCGTCCATGCCGAGAGTGAT 1500
< 3XP3-EGFP MARKER >
CCCGCGCGCGCTCACGAATCCAGCAGGACCATGTGATCGCGCTTCTGCTGGGGTCTTTGCTCAGGCGGAGCTGGGTGCTCAGGTAGTGGTTGTGCGGC 1600
< 3XP3-EGFP MARKER >
AGCAGCACGGGGCGTCCGCGATGGGGGTGTTCTGCTGCTAGTGTGCGCGAGCTSCAGCTGCGCTCTCGATGTTGTGCGCGATCTTGAAGTTCACCT 1700
< 3XP3-EGFP MARKER >
TGATGCGCTTCTTCTGCTTGTGCGCCATGATATAGACGTTGTGCTGTTGTAGTTGTACTCCAGCTTGTGCCCCAGGATGTTGCGCTCTCTTGAAGTC 1800
< 3XP3-EGFP MARKER >
GATGCCCTTCAGCTCGATGGGTTTACCGAGGTGTGCGCCCTCGAAGTTACCTCGCGCGGGTCTTGTAGTTGCGCTCTCTTGAAGAGATGTTGCGC 1900
< 3XP3-EGFP MARKER >
TCCTGAGCTAGCTTCCGGCATGGCGACTTGAAGAGTGTGCTGCTTCTGCTGCTGCGGCTAGCGGCTGAAGCACTGACACCCGAGGTCAGGGTGG 2000
< 3XP3-EGFP MARKER >
TCACAGGGTGGGCGAGGCGAGGCGAGCTTGGCGGTGTGAGATGAAGTTACAGGCTAGCTTGGCGTAGTGGCATCGCCCTCGCCCTCGCGGAGAC 2100
< 3XP3-EGFP MARKER >

```

FIG. 16(B) cont.

2200
GCTGAACCTTGTGGCCGTTACGTCGCCCTCCAGCTCGACCAAGGATGGGCACCAACCCCGGTGAACAGCTCCTCGCCCTTGCTCACCATGCTGGCGACCCGT
3XP3-EGFP MARKER

2300
GGATCCCGGGCCCCGGGTACCGTCTAGCGGTACCCCGATTGTTAGCTTGTTCAGCTGCGCTTGTATTGCTTAGCTTTGCTTAGCGAGCTG
3XP3-EGFP MARKER

2400
TTCACTTTGCTTGTGTAATTGAATTGCTGCTCCGTAGACGAAGCCCTCTATTATTAATCTCCGGCGGTGAGGGTTCGAAATCGAATAAGCTTGATCCTA
3XP3-EGFP MARKER

2500
ATTGAATTAGCTCTAATTGAATTAGTCTCTAATTGAATTAGATCCCGGGCGAGCTCGAATTACCAATTGTGGGAACACTAGTGGATCCCCGGGCTGCA
3XP3-EGFP MARKER

2600
GGAATTCGATATCAAGCTTATCGATAACGTCGACCTCGAGGGGGGCGCGGTACCAATTGCCCCATAGTGAGTCTGATTAAGATCAGCGTAGATCCA
LEFT TERMINAL REPEAT

2700
TGGCTCAATTTTACGCATGATTATCTTTAAGCTACGTCACAAATATGATATCTTTCTAGGGTTAATCTAGCTGCGTGTCTGACGGTGTGCGGATCTT
LEFT TERMINAL REPEAT

2800
CATCTGCTCCATCAGCTGTAAACACATTGCAACCGGAGTCTGCCGTCTCCACGGGTTCAAAAAGTGAATGAACGAGGCGCGCTTGGCGTAATCA

2900
TGCTCATAGCTGTTTCTGTGTGAATTGTATCCGCTCACAATTCCACACACATACGAGCCGGAAGCATAAAGTGTAAAGCCTGGGGTGCTTAATGAG

3000
TGAGCTAATCTACATTAATTGCGTTGCGCTCACTGCCCCGCTTTCCAGTCGGGAAACCTGTCTGTCAGCTGCATTAATGAATCGGCCAACGCGCGGGAG

3100
AGGCGGTTTGGGATGGGGGCTCTTCGCTTCTCTGCTCACTGACTGCTGCGCTCGGTCTGCTGCGGCGGCGAGCGGTATCAGCTCACTCAAGGCG
COLE1 ORIGIN

3200
GTAATACGGTTATCCACAGAATCAGGGGATAACGCAAGAAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCTTGCTGG
COLE1 ORIGIN

3300
CGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGAGCTCAAGTCAGAGGTGGCGAAACCCSACAGGACTATAAGATACGAGCGGTT
COLE1 ORIGIN

3400
TCCCCCTGGAAGCTCCCTCGTGGCTCTCCTGTTCGACCTGCGGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCAT
COLE1 ORIGIN

3500
AGCTCAGCTGTAGGTATCTCAGTTGCTGTAGGTGCTTCCGCTCCAGCTGGGCTGTGTGACGAACCCCCCTTCAGCCCCAGCGCTGCGCTTATCCG
COLE1 ORIGIN

3600
GTAATATCGTCTTGAGTCCAAACCGGTAGACACGACTTATCGCACTGGGAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGC
COLE1 ORIGIN

3700
TACAGAGTCTTGAAGTGGTGGCCTAATACGGCTACACTAGAAAGGACAGTATTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAGAGAGTT
COLE1 ORIGIN

3800
GGTAGCTCTTGATCCGGCAAAACCAACCGCTGGTAGCGGTGGTTTTTTTGTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAGATC
COLE1 ORIGIN

3900
CTTGTATCTTTTCTACGGGCTCTGACGCTCAGTGAACCAAACTCAGCTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTACCTAGATCCT
COLE1 ORIGIN

4000
TTTAAATTAAGAAATGAAGTTTAAATCAATCTAAAGTATATATGAGTAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAAGCACTTCTCAGCG
COLE1 ORIGIN

AMPICILLIN RESISTANCE

Fig. 16(B) cont

4100
ATCTGTCATTTTCGTTTCATCCATAGTTGCCTEACTCCCCGTCGTGAGATACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGTGCAATGATAC
AMPCILLIN RESISTANCE >

4200
CGCGAGACCCACGCTCACC GGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCTGCAACTTTATCCGCTCCAT
AMPCILLIN RESISTANCE >

4300
CCAGTCTATTAATTGTTGCGGGGAAGCTAGAGTAAGTAGTTTCGCGAGTTAATAGTTTGCACACGTTGTTGCCATTGCTACAGGCATCTGTGCTCACGC
AMPCILLIN RESISTANCE >

4400
TCGTCTGTTGGTATGGCTTCATTGAGCTCCGCTTCCCAACGATCAAGGCGAGTTACATGATCCGCCATGTTGTGCAAAAAGCGTTAGCTCCTTCGGTC
AMPCILLIN RESISTANCE >

4500
CTCCGATCGTTGTCAGAAAGTAAGTTGGCCGCGAGTGTATCACTCATGTTATGGCAGCACTGCATAATTCCTTACTGTTCATGCCATCCGTAAGATGCTT
AMPCILLIN RESISTANCE >

4600
TTCTGTGACTGGTGAGTACTCAACCAAGTCAATCTGAGATAAGTGTATCGCGGACCGAGTTGCTCTTGGCCCGGCTCAATACGGGATAATACCGCGCCA
AMPCILLIN RESISTANCE >

4700
CATAGCAGAACTTAAAGTGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACCTCAGGATCTACCGCTGTTGAGATCCAGTTCCGATGTACCCA
AMPCILLIN RESISTANCE >

4800
CTCGTGACCCCACTGATCTTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAAATAGGGC
AMPCILLIN RESISTANCE >

4900
GACACGGAAATGTTGAATCTCACTCTTCTTTTCAATATTAATGAAGCATTTATCAGGGTATGTTCTCATGAGCGGATACATATTTGAATGATTT
AMPCILLIN RESISTANCE >

TAGAAAAATAACAAATAGGGGTTCCGCGCACATTTCGCCGAAAAGTGCCAC (SEQ ID NO: 52)

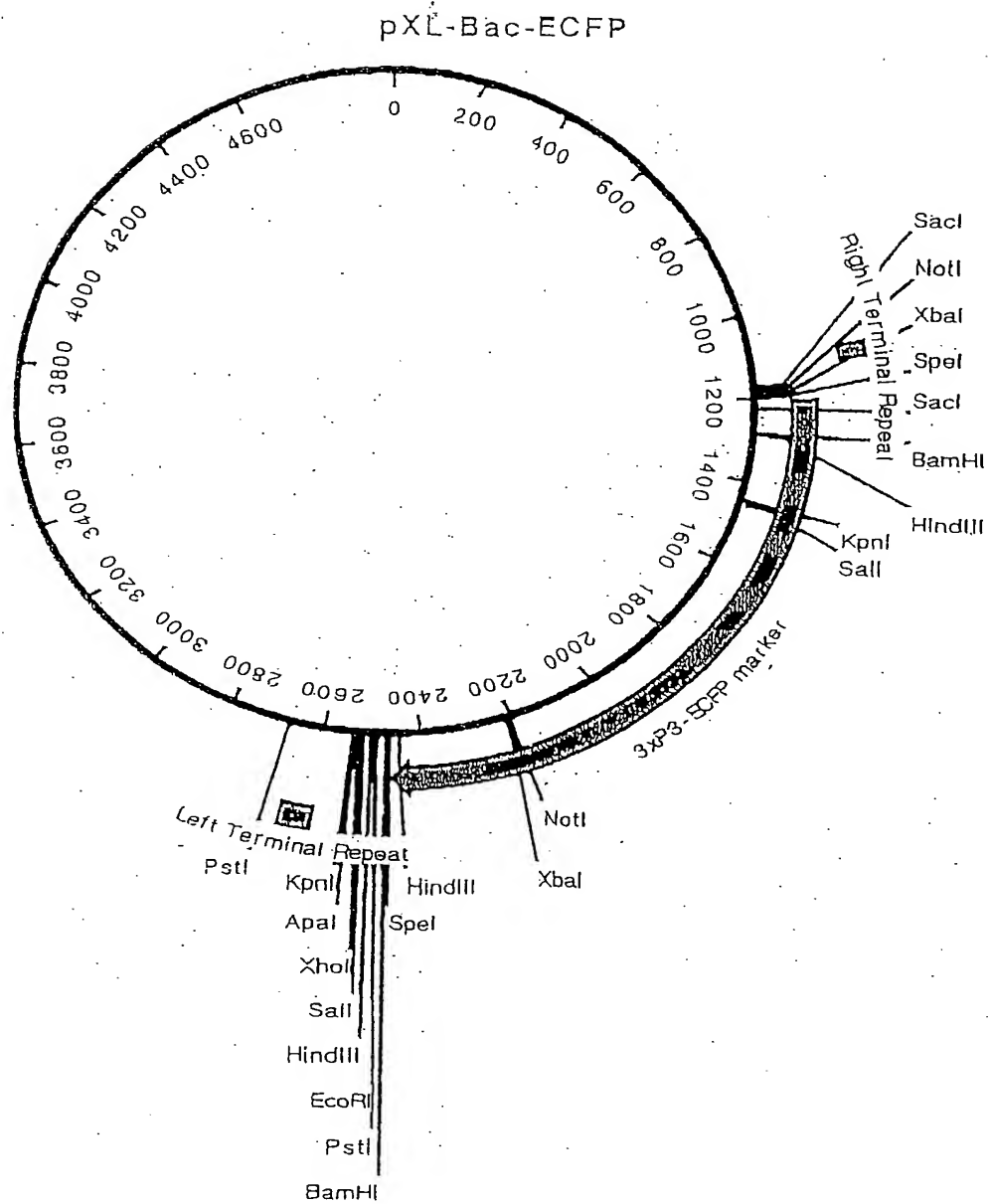


FIG. 17(A)

FIG. 17(B)

pXL-3ec-ECFP

Sequence Range: 1 to 4941

```

100      CTAATTTGTRAGCGTTAAATTTTGTAAAAATCGCGTTAAATTTTGTAAATCAGCTCATTTTTEACCAATAGGCCGAAATCGGC AAAATCCCTTAT
200      AATCAAAAGAATGACCGAGATAGGGTTGATGTGTTCAGTTTGGACAAGAGTCCACTATTAAAGAAGCTGGACTCCAACGTCAAGGGCGAAAAA
300      CCGTCTATCAGGGCGATGGCCCACTACGTGAACCTACCCCTAATCAAGTTTITGGGGTCGAGGTGCCGTAAGCACTAAATCGGAACCTAAAGGGAG
400      CCCCCGATTTAGAGCTTGACGGGGAAAGCCGGCGAAGCTGGCGAGAAAGGAAGCGGAAGAAAGCGAAAGGAGCGGGCGCTAGGGCGCTGSCAAGTGTAGCG
500      GTCACGCTGCGCGTAACCAACACACCCCGCGCTTAATGCGCGCTACAGCGCGCGTCCCATTCGCCATTGAGGCTGCGCAACTGTTGGGAAGGGCGAT
600      CGGTGCGGGCCCTCTTCCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGGCGATTAAGTGGGTAAACGCCAGGGTTTTCCAGTCACGACGTTG
700      TAAACGACGSCCAGTGAGCGCGCCCGCGGGTAACCTACSGGGTATCCATGTCCATTTCGCGGCATCCAGCCAGGATACCCGCTCCTCGCTGACGTAAT
800      ATCCACGCGCGCCACCGCTGTCTATTATCTGACACCGCGCACGGCAGTTCCGGCTGTGCGCGGTATTGTTGCGGTTGCTGATGCGCTTCGGGCTGACCAT
900      CGGAACTGTGTCCGAAAGCCGCGACGAACTGGTATCCAGGTGGCTGAACGAACATTCACCGTTAAAGGCGGTGCTAGGCCACACCTTCCCGATC
1000     ATCATGGTAAGCTGCGTTTTCTGCTCAACGTCAATGACGAGCAGTCACTCCTCGCAAACTCTTTCCATGCGCGCTCAACCTCGCGGAAAAAGGACGSG
1100     CTCTTCTCTCCCCGATGCCAGATAGCGCCAGCTTGGGCGATGACTGAGCCGGA AAAAGACCGGACGATATGATCTGATGAGCTTAGATTAACTTAG
1200     AAAGATAGTCTGCGTAAATTTGACGCGATGATCTAATTAACCTCACTAAAGGGAACAAAGCTGGAGCTCCACCGCGGTGGCGCGCGCTCTAGAAC TAGT
< RIGHT TERMINAL REPEAT >
1300     GTTCCACAATGGTTAATTCGAGCTCGCCCCGGGATCTAATTCATTAGAGACTAATTCATTAGAGCTAATTCATTAGGATCCAAGCTTATCGATTTC
3XP3-ECFP MARKER
1400     GAACCTCGACCGCGGAGTATAAATAGAGCGCTTCGCTCTACGAGCGACAATTCAATCAACAAAGCAAAGTGAACACGTCGCTAAGCGAAAGCTAG
3XP3-ECFP MARKER
1500     CAAATAAACAAAGCGAGCTGAACAAAGCTAAACAATCGGGGTACCGCTAGAGTGCAGCGGTACGATCCACCGGTGCGCCACCATGGTGAGCAAGGCGGAG
3XP3-ECFP MARKER
1600     CTGTTACCGGGGTGGTGCCATCTTGSTCGAGCTGGACGGCGAGCTAAACGGCCACAAAGTTGAGCGGTGTCGGCGAGGGCGAGGGCGATGCCACCTAGC
3XP3-ECFP MARKER
1700     GCAAGCTGACCTGAAGTTTATCTGACCAACCGCGAAGCTGCCCCGTGCCCCACCCCTCGTGACCAACCTGACCTGGGGCTGCAAGTCTTCAGCCG
3XP3-ECFP MARKER
1800     CTACCCCGACCACTGAAGCAGCAGCTTCTTCAAGTCCGCCATGCCCCGAAGGCTACGTCAGGAGGCGCCACCATCTTCTTCAAGGAGCAGCGCAACTAC
3XP3-ECFP MARKER
1900     AAGACCCGCGCGAGGTGAAGTTGAGGGCGACACCCCTGGTGAACCGCATCGAGCTGAAGGGCATCGATTTCAGGAGGAGCGCAACATCCTGGGGCACA
3XP3-ECFP MARKER
2000     AGCTGGAGTACAACATACATCAGCCACACGCTGATATACCGCCGACAAAGCAGAGACGGCATCAAGGCCAATTCAGATCGCCACAAATCGAGGA
3XP3-ECFP MARKER
2100     CGGCAGCGTGACGCTCGCGGACCACTACGAGCAGAACCCCCATGGCGAGCGCCCCGTGCTGCTGCCCCGACCAACCACTACCTGAGCAACCACTGCGCC
3XP3-ECFP MARKER

```

FIG. 17(B) cont.

CTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCTGCTGAGTTTCGTGACCGCCGCCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAA 2200
3XP3-ECFP MARKER

GCGGCCGCGACTCTAGATCAATCAGCCATACCAATTGTGAGAGTTTACTTGCTTTAAAAAACCTCCACACCTCCCCCTGAACCTGAACATAA 2300
3XP3-ECFP MARKER

ATGAATGCAATTGTTGTGTACTTGTATTATGAGCTTATAATGTTTCAATAAAGCAATAGCATCACAAATTCACAAATAAAGCATTTTTTTTCAC 2400
3XP3-ECFP MARKER

TGCATTCTAGTTGTGTTTGTCCAAACTCATCAATGTATCTTAAAGCTTATCGATACGGCTACGGCACTAGTGGATCCCCCGGGCTCCAGGAATTCGATA 2500
3XP3-ECFP MARKER

TCAAGCTTATCGATACCGTCCAGCTCCAGGGGGGGCCCGGTACCCCAATTCGCCCTATAGTGAATCGTATTAAAGATCAGCGGTAGATCCATCGCTCAATTT 2600

TACGCATGATTATCTTTAAGCTAGCTCACAATATGATTATCTTTCTAGGGTTAATCTAGCTGCGTGTCTGACGCTGTCCAGCATCTTCATCTGCTCCA 2700
LEFT TERMINAL REPEAT

TCACGCTGTAAAAACATTTGCCACGCGAGTCTGCCCGTCTCCACGGGTTCAAAAACGTGAATGAACGAGGCGCGCTTGGCGTAATCATGGTCAATAGCT 2800

GTTTCTGTGTGAATTTGTATCGGTCACAATTCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCCTGGGGTGCCTAATGAGTGAAGTAACTC 2900

ACATTAATTGCGTTGCGCTCAGTCCCGCTTTTCAGTCCGGAAACCTGTCTGTCAGCTGCATTAAATGAATCGGCCAACCGCGCGGGGAGAGSCGGTTTGC 3000

>ColE1 origin

GTATTGGGCGCTCTTCCGCTTCTCTGCTCACTGACTCTGCTCGCTCGGTCTGCTCGGCTSCGGCGAGCGGTATCAGCTCACTCAAGGCGGTAATACGTT 3100

ATCCACAGAATCAGGGGATAACGACAGAAAGAACATGTGAGCAAAAGGCGCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCTTGTGGCGTTTTCCTAT 3200

AGGCTCCGCCCCCTGACGAGCATCAAAAAATCAGCGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGCGCTTCCCGCTCGAA 3300

GCTCCCTCGTGGCTCTCCCTGTTCCGACCTGCGGCTTACCGGATACTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCAGCGTG 3400

TAGGTATCTCTGTTGCGGTAGGTCGTTGCTCCAGCTGGGCTGTGTGACGAACCCCGCTTCAGCCCGACCGCTGCGGCTTATCGGTAACTATCGT 3500

CTTGAGTCCAAACCGGTAAAGACAGGACTTATCGCCACTGCGCAGCGCACTGTGTAACAGGATTAGCAAGCGAGGTATGTAGGCGGTGCTACAGAGTTCT 3600

TGAAGTGGTGGCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGGCACTTACCTTCGGAAAAAGAGTTGGTAGCTCTTG 3700

ATCCGGCAAACAAACACCGCTGGTAGCGGTGGTTTTTTTGTGTTGCAAGCAGCAGATTACCGCGAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTT 3800

TCEACGGGGTCTGACGCTCAGTSGAAGCAAACTCACGTTAAGGGAATTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAATTA 3900

AATGAAGTTTAAATCAATCTAAAGTATATAAGTAACTTGGTCTGACAGTTACCAATGCTTAATCAAGTGAAGCACTATCTCAGCGATCTGCTATT 4000
AMPICILLIN RESISTANCE

TCGTTTATCCATAGTTGGCTGACTCCCGCTCGTGTAGATTAATACGATACGGAGGGCTTACCATCTGCCCCAGTGTGCAATGATACCGCGAGACCA 4100
AMPICILLIN RESISTANCE

CGGTCACCGGCTCCAGATTATCAGCAATAAACAGCCAGCCGGAAGGGCCGAGCGCGCAAGTGTCTGCAACTTTATCCGCTTCCATCCAGTCTAATTA 4200
AMPICILLIN RESISTANCE

Fig. 17(B) cont.

```
ATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGCCGCAACGTTGTTCGCATTGCTACAGGCATCGTGGTGTACAGCTCGTCTTTGG 4300
      AMPICILLIN RESISTANCE >
TAIGGCTTCATTACAGCTCCGGTTCCCAACGATCAAGGCCAGTTACATGATCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCCCTCCGATCGTT 4400
      AMPICILLIN RESISTANCE >
GTCAGAAAGTAAGTTGGCCGCACTGTTATCACTCATGGTTATGGCAGCACTGCATAATCTCTTACTGTGATGCCATCCGTAAGATGCTTTTCTGTGACTG 4500
      AMPICILLIN RESISTANCE >
GTGAGTACTCAACCAAGTCATTCTGAGATAGTGTATGCCGCGACCGAGTTGCTCTTGCCCCGGCSTCAATACGGGATAATACCGCGCCCATAGCAGAAC 4600
      AMPICILLIN RESISTANCE >
TTTAAAAGTGTCTATCATTGGAAAACGTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAAACCCACTCGTGCACCC 4700
      AMPICILLIN RESISTANCE >
AATGATCTTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAGGCAAAATECCGCAAAAAGGGGAATAGGGCGACACGGAAT 4800
      AMPICILLIN RESISTANCE >
GTGAAATACTCATACCTCTCTTTTCAATATTATTGAAGCATTATCAGGGTATTGTCTCATGAGCGGATACATATTGATGTATTAGAAAAATRA 4900
      AMPICILLIN R >
ACAAATAGGGGTTCCGCGCACATTTCCCCGAAAAGTGCCAC (SEQ ID NO: 53)
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pBS-ITR-ECFP

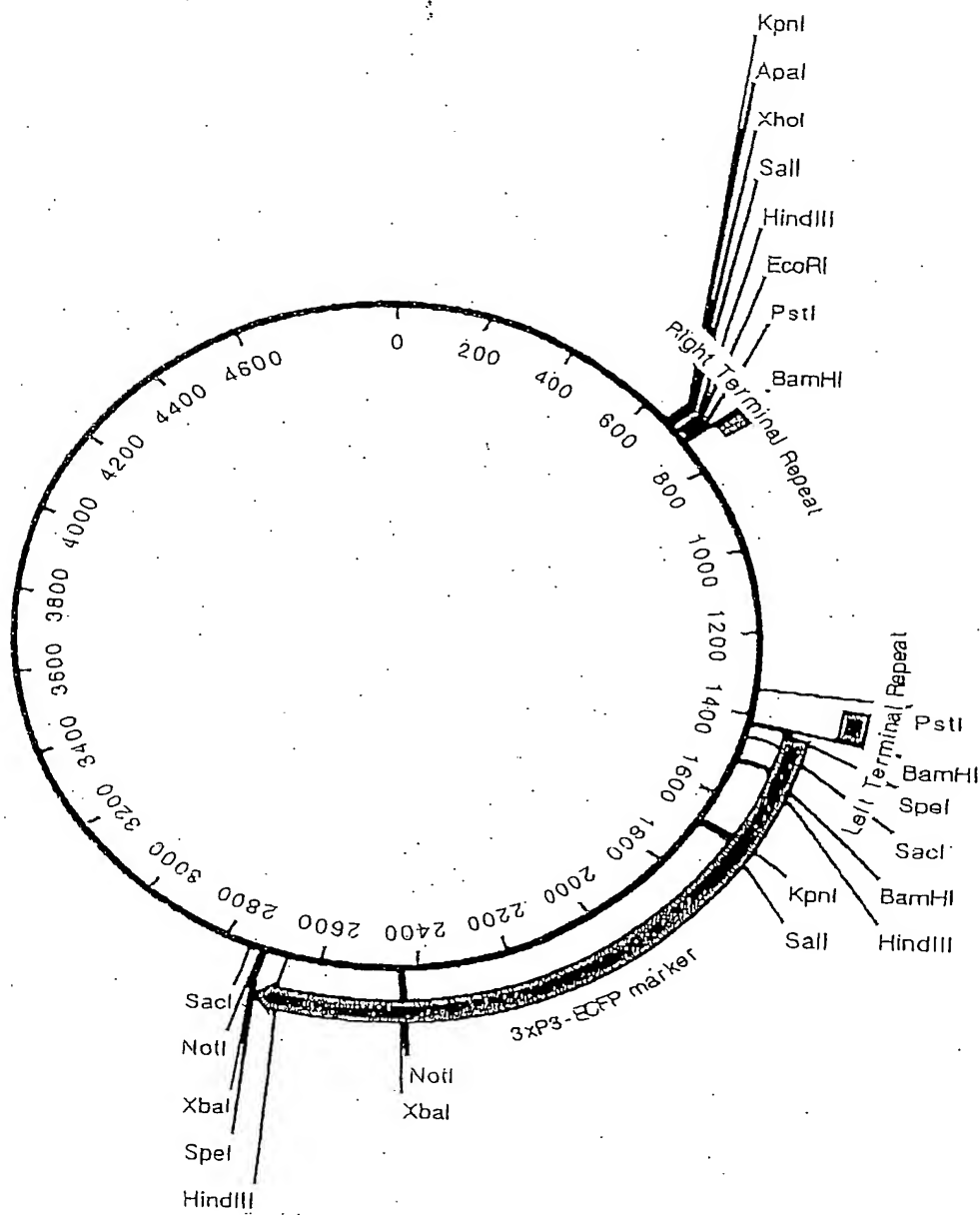


FIG. 18(A)

FIG. 18(B)

CACCTGACGGCCCTGTAGCGGCCCATTAAGCGCGCGCGGGTGTGGTGTTACGGCGCAGCGTGACC GGCTACACTTGCACAGCGCCCTAGCGCCCGCTCCTTT
100

CGCTTTCCTCCCTTCCTTCCTCGCCACGTTCCCGGCTTCCCCGTCAAGCTCTAAATCGGGGCTCCCTTTAGGGTTCGGATTAGTGCTTACGGCAC
200

CTCGACCCCRAAAAAC TTGATTAGGGTGATGGTTACGTAGTGGGCCATCECCCTGATAGACGGTTTTTCGCCCC TTTGACGTTGGASTCCACGTTCTTA
300

ATAGTGACTCTTGTTCCAAAC TGGAACAACACTCAACCTATCTCGGTCATCTTTTGATTTATAAGGGATTITGCCGATTTCGGCCATTATGGTTTAA
400

AATGAGCTEATTTAACAAAAATTTAAGCGCAATTTTAACAAAATATTAAAGGTTACAAATTTCATTTCGCCATTTCAGGCTCGGCAACTGTTGGGAAGGGC
500

GATCGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGATGTGCTGCAAGCGATTAAAGTTGGGTAACGCCAGGGTTTTCCCGATCACGAC
600

TTGTAAACGACGCGGCAGTGAATTTAATACGACTCACTATAGGGCGAATTGGGTACCGGGCCCCCCTTCAGGTCGACGGTATCGATAAGCTTGATATC
700

GAATTCCTGCAGGCCCGGGGATCCCATGCGTCAATTTTACGCAGACTATCTTTCTAGGGTTAATCTAGCTGCATCAGGATCATATCGTCGGGTCITTTT
800
RIGHT TERMINAL REPEAT >

CGGECTCAGTCATCGCCCAAGCTGGCGCTATCTGGGCATCGGGGAGGAAGAAGCTCCGTGCCCTTTCCCGCGAGGTTGAAGCGGCATGGAAGAGTTTGGC
900

GAGGATGACTGCTGCTGCATTGACGTTGAGCGAAAACGCACGTTTACCATGATGATTTCGGTAGGGTGTGGCCATGCACGCCTTTAACGGTGAAC TGTTCG
1000

ITCAGGCCACCTGGGATACCAAGTTCTCGCGGGCTTTTCCGGACACAGTTCGGGATGGTCAGCCCGAAGCGCATCAGCAACCCGAACAATACCGGCGACAG
1100

CCGGAATCCCGTSCCGGTGTGTCAGATTAAATGACAGCGGTGCGGCGCTGGGATATTACGTCAAGCGAGGACGGGTATCCTGGCTCGATGCCGAGAAATGG
1200

ACATGGATACCCCGTGAGTTACCGGCGGCTCGTTCAATTCAGCTTTTGAACCCGTGGAGGACGGGCGAGCTCGCGGTGCAAAATGTGTTTACAGCGTGA
1300

TGGAGCAGATGAAGATGCTCGACACGCTGCAGAACACCGACGTAGATTAACTAGAAAGATAATCATATTGTGACGTACGTTAAGATAATCATCGGTA
1400
LEFT TERMINAL REPEAT >

AAATTGACGCATGGGATCCACTAGTGTTC CCAATGTTAATTCGAGCTCGCCCGGGGATCTAAATTCAATTAGAGACTAATTC AATTAGAGCTAATTC
1500
>
3XPJ-BCFP MARKER >

ATTAGGATCCAAGCTTATCGATTTCGAACCTTCGACCGCGGAGTATAAATAGAGGCGCTTCGTTACGGAGCGACHATTCAATTCAAACAAGCAAGTG
1600
3XPJ-BCFP MARKER >

AACACGTCTGTAAGCEAAAGCTAAGCAATAAAGCAGCGCAGCTGAACAAGCTTAACAATCGGGGTACCGCTAGAGTCEACGGTACGATCCACCGGTCGC
1700
3XPJ-BCFP MARKER >

CACCATGGTGAGCAAGGGCGAGGAGCTGTTCAACGGGGTGGTGCCCTCTCTGCTGAGCTGGACGGCGACGTAACGGGCCACAAGTTACGCTGTTCGGC
1800
3XPJ-BCFP MARKER >

GAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCTGAGGTTCTATGCAACACCGGCAAGCTGCCCCGTCCTGTCGCCACCTCTGTCACCACTCTGA
1900
3XPJ-BCFP MARKER >

CCTGGGGCGTGCAGTGCTTCAGCGGCTACCCCGACCATGAAGCAGCGACGACTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCACGAGCGCACCAT
2000
3XPJ-BCFP MARKER >

CTTCTTCAGGACGACGGCAACTACAGAGCCCGCGCGAGGTGAAGTTTCGAGGGCGACACCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAG
2100
3XPJ-BCFP MARKER >

FIG. 18(B) cont.

```

2200
GAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACCTACATCAGCCACACCTCTATATCACCGCCGACAAAGCAGAAGAACGGCATCAGGCGCACT
3XP3-SCFP MARKER
>

2300
TCAAGATCCGCCACAACATCAGAGGACGGCAGCGTGCAGCTCGCGGACCACTACAGCAGAACACCCCCATCGGCGACGGCCCGCTGCTGCTGCCCGACAA
3XP3-SCFP MARKER
>

2400
CCACTACCTGAGCAGCCAGTCCGCCCTGAGCAAGACCCCAACGAGAAGCGCGATCAGATGCTCTGCTGGAGTTCGTGACCGCCCGCCGGGATCCTCTC
3XP3-SCFP MARKER
>

2500
GGCATGGACGAGCTGTACAAGTAAAGCGGCGCGACTCAGATCATATCAGCCATACCACTTTGTAGAGGTTTACTTGTCTTAAAAAACCTCCGACA
3XP3-SCFP MARKER
>

2600
CCTCCCCCTGAACCTGAACATATAAATGAATGCAATTGTTGTTGTTAACTGTTTATTCAGGCTTATAATGTTACAAATAAGCAATAGCATCAAAAT
3XP3-SCFP MARKER
>

2700
TTCACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGCCAACTCATCAATGATCTTAAAGCTTATCGATACGCGTACGGCGCGCTTAGG
3XP3-SCFP MARKER
>

2800
CGGCGGATACATAGTTCTAGAGCGGCGCCACCGCGGTGGAGCTCAGCTTTTGTTCCTTTAGTGAGGGTATTTTCAGGCTTGGCGTAATCATGGTCA
>

2900
TAGCTGTTCTCTGTGTGAATTTGTTATTCGCTCACAATTCACACAACATACGAGCGGGAAGCATAAAGTGTAAAGCCTGGGGTGCTAATGAGTGAGCT
3000
AACTCACAATAATTGCGTTGCGCTCACTGCCCCGCTTTCCAGTCGGGAACCTGTCTGTCAGCTGCATTAAATGAATCGGCCAACGCGCGGGGAGAGCGCG
>ColE1 origin
|
3100
TTTGCCTATTGGGGCGCTCTTCCGCTTCTCGCTCACTGACTCGCTGCGCTCGGTCTGTTGCGCTGCGCGGACCGGTATCAGCTCACTCAAAGCGGTAATA
3200
CGGTTATCCACAGAAATCAGGGGATAAGCGAGGAAAGAACATGTGAGCAAAAGGCGCAGCAAAAGGCCAGGAACCGTAATAAAGCGCGCTTGTGCTGGCTTTT
3300
TCCATAGGCTCCGCCCCCTGACGAGCATCACAATAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGCACTATAAAGATACCAGGCGTTTCCCCC
3400
TGGAGGCTCCCTCGTGGCTCTCTGTTCCGACCTGCGGCTTACCGGATACCTGTGCGGCTTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCA
3500
CGCTGTAGGTATCTCAGTTGCGGTGTAGTCTGTTGCTCCAGGCTGGGCTGTGTGACGAACCCCCGTTACGCCCCGACCGCTCGGCTTATCGGGTAAT
3600
ATCGTCTTGAATCCAAACCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGGTGCTACAGA
3700
GTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAGTATTGGTATCTGCGCTCTGCTGAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGC
3800
TCTTGATCCGSCAPACAAACCACCGCTGGTAGCGGTGTTTTTTTTTTTGTTCAGGACAGAGATTACCGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGA
3900
TCTTTTCTACGGGGTCTGACGCTCAGTGAACGAAACTCAGCTTAAGGGATTTTGTCTAGGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAA
4000
TTAAAAATGAAGTTTTTAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTACCAATGCTTAATCAGTGAAGGACCTATCTCAGCGAATCTGT
AMPCILLIN RESISTANCE
>

4100
CTATTTGTTTCAATCATAGTTGCGCTGACTCCCGCTCGTGTAGATACTACGATACGGAGGGGCTTACCATCTGSCCCCACTGCTGCAATGATACCGCGG
AMPCILLIN RESISTANCE
>

4200
ACCCACGCTCACCAGGCTCCGATTTATCAGCAATAAACACAGCCAGGCGGAGGGCGAGCGCAGAGTGGTCTGCACTTTATCCGCTCCATCCAGTC
AMPCILLIN RESISTANCE
>

```


Fig. 18(B) cont.

TATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCCGCCAGTTAATAGTTTGGCGACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACGGCTCGTCCG 4300
AMPCILLIN RESISTANCE >

TTTGGTATGGCTTCATTCAAGCTCCGGTTCCCAACGATCAAGGCGAAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCCTTCGGTCCCTCCGA 4400
AMPCILLIN RESISTANCE >

TCGTTGTCAGAAGTAAGTTGGCCGCACTGTTATCACTCATGGTTATGGCAGCACTGCATTAATCTCTTACTGTCTATGCCATCCGTAAGATGCTTTTCTGT 4500
AMPCILLIN RESISTANCE >

GACTGGTGAGTACTCAACCAAGTCACTCTGAGAATAGTGTATGCGGCGACCGAAGTTGCTCTTGGCCCGCGTCATACGGGATAATACCGCGCCACATAGC 4600
AMPCILLIN RESISTANCE >

AGAACTTTAAAAGTGCTCATCATTTGGAACGTTCTTGGGGCGAAAACCTCTCAAGGATCTTACCGGTGTGAGATCCAGTTTCGATGTAACCCACTCGTG 4700
AMPCILLIN RESISTANCE >

CACCCAACTGATCTTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAGGGCGACACG 4800
AMPCILLIN RESISTANCE >

GAAATGTTGAATACTCAIACCTCTTCTTTTCAATATTATGAAGCAITTTATCAGGGTTATTGTCTCATGAGCGGATACATATTGAATGTATTAGAAA 4900
AMPCILLIN RESISTANCE >

AATAAACAAATAGGGGTTCCCGGCACATTTCCCCGAAAAGTGC (SEQ ID NO: 54)

pBS-ITR-EGFP

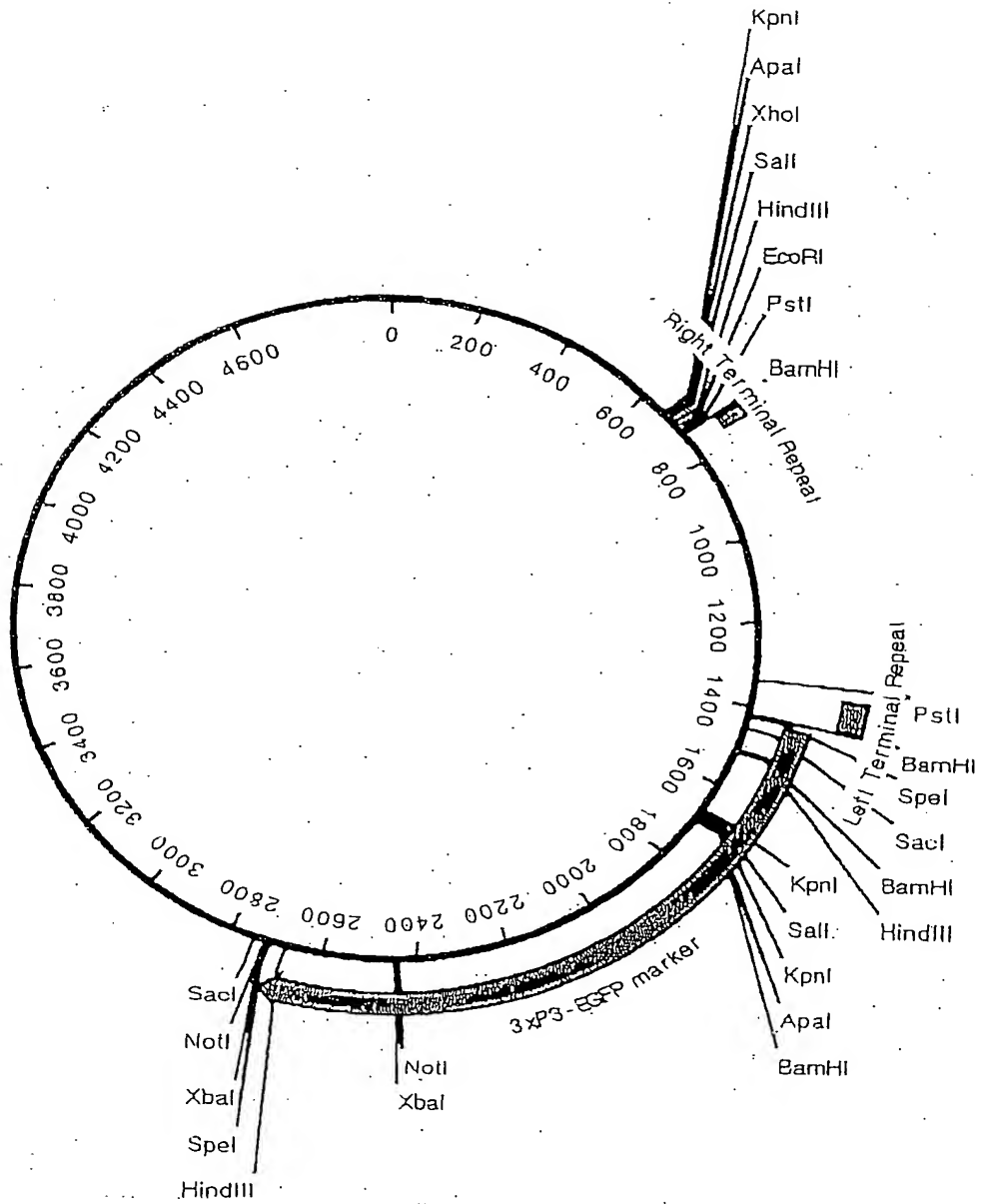


FIG. 19(A)

FIG. 19(B)

Sequence Range: 1 to 1944

```

CACCTGACGGCCCTGTAGCGGCGCATTAAGCGCGCGGGGTGTGGTGTACGGCGCGGTGACCGCTACACTTGGCAGCGCCCTAGCGCCCGCTCCTTT      100
CGCTTCTTCCCTTCCTTTCTCGCCACGTTGCGCGGCTTTCCCGCTCAAGCTCTAAATCGGGGGCTCCCTTTAGGGTTCCGATTAGTGCTTACGGCAC      200
CTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCATCGCCCTGATAGACGGTTTTTTCGCCCTTTTACGTTGGAGTCCACGTTCTTTA      300
ATAGTGGACTCTTGTTCCAAACCTGGAACAACACTCAACCCCTATCTCGGTCTATTCTTTTGATTATAAGGGAATTTGCCGATTTCGGCCCTATTGGTTAAA      400
AAATGAGCTGATTAAACAAAATTAAACGCGAATTTTAACAAAATATTAAAGCTTACAATTTCCATTGCCATTTCAGGCTGCGCAACTGTTGGGAAGGGC      500
GATCGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAGGGGGATGTGCTGCAAGCCGATTAAAGTTGGSTAACGCCAGGGTTTTCCAGTCACGACG      600
TTGTAACACGACGGCCAGTGANTGTATAACGACTCACTATAGGGCGAATTTGGTACCGGGCCCCCCCCCTCGAGGTGACGGTATCGATAGCTTGATATC      700
GAATTCCTGACGCCCGGGGGATCCCATGCGTCAATTTTACGACAGACTATCTTTAGGGTTAATCTAGCTGCATCAGGATCATATCGTCGGGTCTTTTTT      800
      RIGHT TERMINAL REPEAT      >
CCGGCTCAGTCATCGCCCAAGCTGCGCTATCTGGGCATCGGGGAGGAAGAGCCCGTGCCCTTTCCCGCGAGGTTGAAGCGGCATGGAAGAGTTTGCC      900
GAGGATGACTGCTGCTGCAATTGACGTTGAGCGAAACGCGACGTTTACCATGATGATTCGGGAAGGTGTGGCCATGCACGCCCTTTAACGGTGAAGTGTTC      1000
TTCAGGCCACCTGGGATACCACTTCGTCGCGGCTTTTCGGACACAGTTCGCGATGGTCAGCCCGAAGCGCATCAGACACCGAACAATACCGCGACAG      1100
CCGGAAGTCCCGTGCCTGGTGTGAGATTAAAGACAGCGGTGCGGGCTGGGATTTACGTGAGCGAGGACGGGTATCCTGGCTGGATGCGCGAAGATGG      1200
ACATGGAATACCCGTGAGTTACCCGGCGGCTCGTTCAATTCAGGTTTTTGAACCCGTGGAGGACGGGCACTCGCGGTGCAATGTGTTTACAGCGTGA      1300
TGGACGAGATGAAGATGCTGACACGCTGCAGAACCGCAGCTAGATTAACTAGAAAGATAATCATATTGTGACGTACGTTAAAGATAATCATGCGTA      1400
      LEFT TERMINAL REPEAT      >
AAATGACGCGATGGGATCCACTAGTGTTCACAAATGGTTAATTCAGGCTCGCCCGGGGATCTAATTCATTAGAGACTAATTCATTAGAGCTAATTC      1500
      3XP3-EGFP MARKER      >
ATTAGGATCCAAGCTTATCGATTTCGAACCTCGACCGCGCGGATATAAATAGAGGGCGTTCTGCTACGGAGCGACAAATTCATTCAAACAGCAAAGTG      1600
      3XP3-EGFP MARKER      >
AACACGTGCTTAAGCGAAAGCTAGCAATAAACAAGCGCAGCTGAACAAGCTAAACAATCGGGGTACCGCTAGAGTTCGACGGTACCGCGGGCCCGGGAT      1700
      3XP3-EGFP MARKER      >
CCACCGGTGCGCCACCATGGTGAGCAAGGCGAGGAGCTGTTACCGGGGTGGTGCCATCTTGGTCTGAGCTGGACGGCGACGTAAACGGCCACAAGTTCA      1800
      3XP3-EGFP MARKER      >
GCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCTGAGTTTCACTGCAACACCGGCAAGCTGCCCGTGGCTGGCCCACTCTCGT      1900
      3XP3-EGFP MARKER      >
GACCAACCTGACCTAGCGCGTGCAGTCTTCAGCCGCTACCCCGACCATGAAGCAGCAGGACTTCTTCAAGTCCGCCATGCCCAAGGCTACGTCCAG      2000
      3XP3-EGFP MARKER      >
GAGCGCACCATCTTTTCAAGGACGACGGCAACTACAAACCCCGCGCGAGGTGAAGTTTCAAGGGCCACACCTGGTGAACCGCATCGAGTGAAGGGCA      2100
      3XP3-EGFP MARKER      >

```

Fig. 19(B) cont.

TCGACTTCAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACAGCCACACGCTCTATATCATGGCCGACAAGCAGAAGAACGGCAT 2200
JXP3-BGFP MARKER

CAAGGTGAACCTTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGAGCACTACCAGCAGAACACCCCCATCGGCGACGGCCCCGTGCTG 2300
3XP3-BGFP MARKER

CTSCCCGACAACCACTACCTEAGCACCAGTCCGCCCTGAGCAAGACCCCCAAGAGAACGCGATCACAATGGTCTGCTGAGATTCTGTGACCGCCGCG 2400
3XP3-BGFP MARKER

GGATCACTCTCGGCATGGACGAGCTGTACAAGTAAGCGGCCCGACTCTAGATCATAATCAGCCATACCACATTTGTAGAGGTTTTACTTGTCTTAAAA 2500
3XP3-BGFP MARKER

AACCTCCACACCTCCCGCTGAACCTGAAACATAAAATGAATGCAATTGTGTGTTAACTGTTTATTCAGCTTATAATGGTTACAAATAAGCAATA 2600
3XP3-BGFP MARKER

GCATCACAATTTACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGTTTGTCCAAACTCATCAATGTATCTTAAAGCTTATCGATACGCGTACG 2700
3XP3-BGFP MARKER

GCSCGCTAGACTAGTTCTAGAGCGCGGCCACCGCGGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAGGGTTAATTTGAGCTTGGCGTAATCATGGTC 2800

ATAGCTGTTTCTGTGTGAATTTGTATCCGCTCACAATTCACACAACATACGAGCCGGAAGCATAAAGTGTAAAGCCTGGGGTGCCTAATGAGTGAGC 2900

TAACTCACATTAATTGCGTTGCGCTCAGTGCCTCTTCCAGTCGGGAACCTGTCTGCGCAGCTGCATTATGAATCGGCCAACGCGCGGGGAGAGGGC 3000

>colE1 origin

GTTTGCATATTGGGCGCTCTTCCGCTTCTCTCGCTCACTGACTCGCTGCGCTCGGTCTGTTCCGCTGCGCGGAGCGGTATCAGCTCACTCAAAGCGCGTAAT 3100

ACGGTTATCCACAGAAATCAGGGGATACGCGAGGAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCTTAAAAAGCGCGTTGCTGGCGTTT 3200

TTCCATAGGCTCCGCCCCCCCTGACGAGCATCACAATAATCAGCGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAGATACCAGCGCTTCCCC 3300

CTGGAAGCTCCCTCGTGGCTCTCTGTTCCGACCTGCGGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTC 3400

ACGCTGTAGGTATCTCAGTTGCGTGTAGGTGCTTCCCTCAAGCTGGGCTGTGTGACGAACCCCGGTTACGCGCGACCGCTGCGGCTTATCCGGTAAC 3500

TATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCACTGGTAAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAG 3600

AGTTCTTGAAGTGGTGGCTAACTACGGCTACACTAGAAGGACAGTATTGTGATCTCCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAG 3700

CTCTTSATCCGGCAACAAACCCCGCTGGTAGCGGTGGTTTTTTTGTGTTGCAAGCAGCAGATTACCGGCAGAAAAAAGGATCTCAAGAAATCTTTTG 3800

ATCTTTTCTACGGGCTCTGACGCTCAGTGGAAACGAAACTCACGTTAAGGGAATTTGGTCATGAGATTATCAAAAGGATCTTCACTAGATCCTTTTAA 3900

ATTAAAAATGAAGTTTAAATCAATCTAAAGTATATATGAGTAATTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCGACCTATCTCAGCGGATCTG 4000
AMPICILLIN RESISTANCE

TCATTTTCGTTTATCCATAGTTGCTTGACTCCCGCTCGTGTAGATAACTACGAGGAGGCTTACCATCTGCCCCAGTCTGCAATGATACCGCA 4100
AMPICILLIN RESISTANCE

GACCCACGCTCACCGGCTCCAGATTATCAGCAATAAACCGCCAGCCGGAAGGCGGAGCGCGAAGTGGTCTGCACTTATCCGCTCCATCCAGT 4200
AMPICILLIN RESISTANCE

FIG. 19(B) cont.

CTATTAAATGTTCCCGGAAGCTAGAGTAAGTAAGTTCCGCCAGTAAATAGTTTGGCCAACTGTTGTTGCCATTGCTACAGGCATCGTGGTGTACCGCTCGTC 4300

AMPCILLIN RESISTANCE >

GTTTGGTATGGCTTCATTCAAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCATGTTGTGCAAAAAGCGGTTAGTCTCCTTCGGTCTCTCG 4400

AMPCILLIN RESISTANCE >

ATCGTTGTCAGAACTAAGTTGGCCGCGTGTATCACTCATGTTATGGCAGCAGTGCATAATTCTCTTACTGTTCATGCCATCCGTAAGATGCTTTTCTG 4500

AMPCILLIN RESISTANCE >

TEACTGGTGAGTACTCAACCAAGTCATTCTGGAATAGTGTATGCGCGCACTGAGTTGCTCTTGGCCGCGCTCAATACGGGATAATACCGCGCCACATAG 4600

AMPCILLIN RESISTANCE >

CAGAACTTTAAAGTCTCATCATTTGAAAAACGTTCTTCGGGCGGAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTGATGTAACCCACTCGT 4700

AMPCILLIN RESISTANCE >

GCACCCAACTGATCTTCAGCATCTTTTACTTTACCCAGCGTTTCTGGGTGAGCAAAACAGCAAGGCAAAATGCCGCAAAAAGGGAATAAGGGCGACAC 4800

AMPCILLIN RESISTANCE >

GGAAATGTTGAATACTCACTCTCTCTTTTCAATATTATGAGCATTATCAGGGTTATTGCTCTCATGAGCGGATACATATTTGAATGTATTAGAA 4900

AMPCILLIN RESISTANCE >

AAATAAACAAATAGGGGTTCCGCGCACATTTCCCCGAAAAGTGC (SEQ ID NO: 55)

pBS-ITR-EYFP

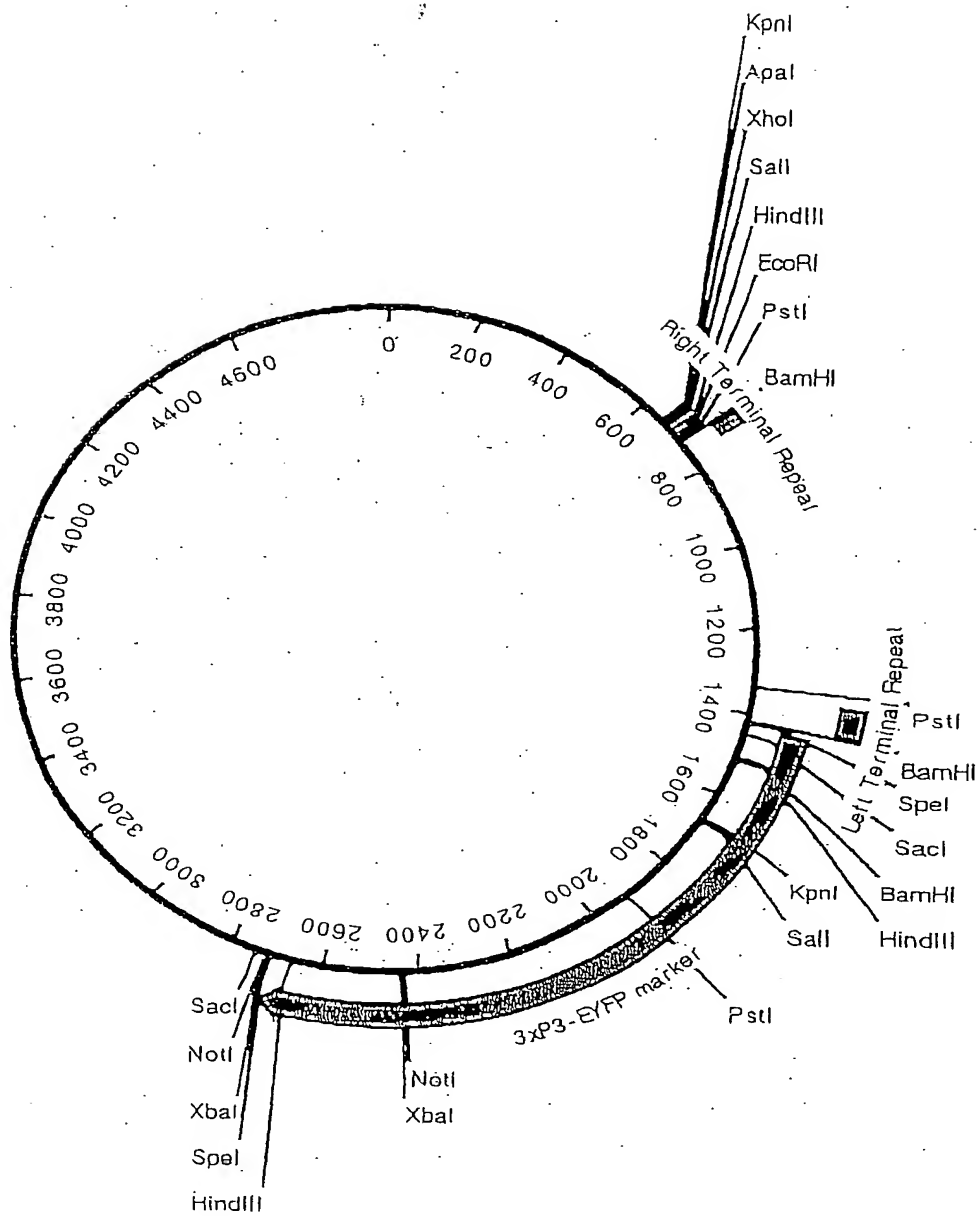


FIG. 20 (A)

100 CACCTGACGCGCCCTGTAGCGGCGCATTAAGCGGCGGCGGTGTGGTGTTCGCGCGAGCGGTGACCGCTACACTTGCCAGCGCCCTAGCGCCCGCTCCTTT
200 CGCTTCTTCCCTTCCCTTTCTCGGCACGTTGCGCGGCTTTCCCGCTCAAGCTCTAAATCGGGGGCTCCCTTTAGGGTTCCGATTAGTGTCTTACGGCAC
300 CTCGACCCCAAAAAC TTGATTAGGGTGATGGTTACGCTAGTGGGCCATCGCCCTGATAGACGGTTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTA
400 ATAGTGGACTCTTGTTCCTAACTGGAACAACACTCAACCCCTATCTCGGTCTATTCTTTTGATTATAAGGGATTTTGCCGATTTCGGCCATTGTTGTTAA
500 AAATGAGCTGATTTAACAAAAATTAAACGCGAATTAAACAAAATATTAACGCTTACAATTTCATTTCGCCATTTCAGGCTGCGCAACTGTTGGGAAGGGC
600 GATCGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTCTCTCAAGCGGATTAAAGTTGGGTAACGCCAGGGTTTCCAGTCACGACG
700 TTGTAAPACGACGGCCAGTGAATTGTAATACGACTCACTATAGGGCGAATTGGGTACCAGGGCCCCCTCGAGGTGACGGTATCGATAAGCTTGATATC
800 GAATTCCTGACGCCCGGGGGATCCCATGCGTCAATTTTACGCAAGACTATCTTTCTAGGGTTAATCTAGCTGCATCAGGATCATATCTGCGGGTCTTTTT
_____ RIGHT TERMINAL REPEAT _____>
900 CCGGCTCAGTCATCGCCCAAGCTGGCGCTATCTGGGCATCGGGGAGGAAGAAGCCCGTCCCTTTCCCGCGAGGTTGAAGCGGCATGGAAGAGTTTCC
1000 GAGGATGACTGCTGCTGCAITGACGTTGAGCGAAACGCAAGCTTACCATGATGATTCCGGGAAGGTGTGGCCATGCAAGCCTTTAACGGTGAAGTGTTCG
1100 TTCAGGCCACCTGGGATACAGTTCGTGCGGGCTTTTCCGACACAGTTCCGGATGGTCAGCCCCGAAGCGCATCAGCAACCCGAACAATAACGGCGACAG
1200 CCGGAAGTCCCGTGCCGGTGTCAGATTAAAGACAGCGGTGCGGGCTGGGATATTACGTACGAGGACGGGTATCTGGCTGGATGCCCGAGAAATGG
1300 ACATGGATACCCCGTGAGTTACCCGCGGGCTCGTTCAITCACGTTTTTGAACCCGTGGAGGACGGGCAGACTCGCGGTGCAATGTGTTTTACAGCGTGA
1400 TGGAGCAAGTGAAGATGCTCGACACGCTGCAACACGCGAGCTAGATTAAACCTAGAAAGATAATCATATTGTGACGTACGTTAAAGATAATCATGCGTA
_____ LEFT TERMINAL REPEAT _____>
1500 AAATTGACGATGGGATCCACTAGTGTTCACATATGTTAATTCGAGCTCGCCCGGGGATCTAATTCATTAGAGACTAATTCATTAGAGCTAATTC
_____>
_____ 3XP3-EYFP MARKER _____>
1600 ATTAGGATCCAAGCTTATCGATTTCGACCCCTCGACCGCGGAGTATAAATAGAGGCGCTTCGCTACGGAGCGACAATTCAATTCAAACAAGCAAAGTG
_____ 3XP3-EYFP MARKER _____>
1700 AACACGTCGCTAAGCGAAGCTAAGCAAAATAACAAAGCGCAGCTGAACAGGCTAAACAATCGGGGTACCGCTAGAGTCGACGGGTACGATCCACCGGTCCG
_____ 3XP3-EYFP MARKER _____>
1800 CACCATGCTGAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTCCCATCTGCTCGAGCTGACGGCGACCTAAACGGCCACAAGTTACGCGTGTCCGGC
_____ 3XP3-EYFP MARKER _____>
1900 GAGGGCGAGGGCGATGCCACCTACGCAAGCTGACCCCTGAAGTTTCATCTGACCAACCGGCAAGCTGCCCCGTCCTGCCCCACCCCTCGTGACCACTTCG
_____ 3XP3-EYFP MARKER _____>
2000 GCTACGGCCTGCACTGCTTCGCCGCTACCCCGACCATGAAGCAAGCAAGCTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCAGGAGCGCAACCAT
_____ 3XP3-EYFP MARKER _____>
2100 CTTCCTCAAGGACGACGGCAACTACAAGACCCGCGCGGAGGTGAAGTTGAGGGCGACACCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAG
_____ 3XP3-EYFP MARKER _____>

Fig. 20(B) cont.

2200
 GAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACCTACACAGCCACAACGTCTATATCATGCCCCGACAAACAGAGAACGGCATCAAGGTEAACT
 3XP3-EYFP MARKER
 2300
 TCAAGATCCGCCACAACATCAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCATCGGCGACGGCCCCGTGCTGCTGCCCGACAA
 3XP3-EYFP MARKER
 2400
 CCACTACCTGAGCTACCACTCCGCCCTGAGCAAGACCCCAACGAGAAGCGCEATCATGCTCTGCTGGAGTTCTGACCGCCGCCGGGATCATCTCTC
 3XP3-EYFP MARKER
 2500
 GGCATGGACGAGCTGTACAAAGTAAAGCGGGCGGCACTCTAGATCATATCAGCCATACCACATTGTAGAGGTTTACTTGGCTTAAAAAACCTCCACA
 3XP3-EYFP MARKER
 2600
 CCTCCCCCTGAACCTGAAACATAAATGAATGCAATTGTTGTTGTAACCTTGTTTATGTCAGCTTATATGTTACAAATAAAGCATAGCATCACAAT
 3XP3-EYFP MARKER
 2700
 TTCACAAATAAAGCATTTTTTTCATGCAATCTAGTTGTTGTTGTCCTCAACTCATATGATCTTAAAGCTTATCGATACGCGTACGGCGCGCTAGG
 3XP3-EYFP MARKER
 2800
 CCGCGGATCACTAGTCTAGAGCGGGCGCCACCGCGGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAAGGTTAATTTGAGCTTGGCGTAATCATGCTC
 2900
 ATAGCTGTTTCTGTTGTAATTTGTTATCTGCTCACAATTCACACAACATACGAGCGGAAGCTAAAGTGTAAAGCTGGGGTGCTTAATGAGTGAGC
 3000
 TAACTCACATTAATTGCGTTGCGCTCACTGCCCCGCTTTCCAGTGGGAAACCTGTCGTGCGAGCTGCTTAATGAATCGGCCAACGCGCGGGGAGAGGCG
 >ColE1_origin
 3100
 GTTTGCGTATTGGGCGCTCTTCGCTTCCTCGCTCACTGACTCGCTGCGCTCGGTCTGTTGCGCTGCGGCGAGCGGTATCAGCTCACTCAAAGCGCGTAAT
 3200
 ACGGTTATCCACAGAATCAGGGGATAACGAGGAAAGAACATGTGAGCAAAAGGCGCAAAAGGCCAGGAACCGTAAAAAGGCGCGTTGCTGGCGTTT
 3300
 TTCCATAGGCTCCGCCCCCTGACGAGCATCACAATAATCAGCGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACAGGCGCTTTCCCC
 3400
 CTGGAAGCTCCCTCGTGGCTCTCTGTTCCGACCTGCGGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAGCGTGGCGCTTTCTCATAGCTC
 3500
 ACCCTGTAGGTATCTCASTTCGGTGTAGGTCTGCTCCAGCTGGGCTGTGTGCACGAACCCCGCTTCAGCCCGACCGCTGCGCTTATCCGGTAAC
 3600
 TATCGTCTTGAATGCCAACCCGTTAAGACAGCACTTATCGCCACTGGCAGCAGCACTGTTAACAGGATTAGCAGAGCGAGTATGTAGGCGGTGCTACAG
 3700
 AGTCTTGAAGTGGTGGCTAACTACGGCTACACTAGAAGGACATTTTGTATCTCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAG
 3800
 CTCTTGAICCGGCAACAAACCACCGCTGCTAGCGGTGTTTGTGTTTGCAGCAGCAGATTACCGCCAGAAAAAAGGATCTCAAGAGATCCTTTG
 3900
 ATCTTTTCTACGGGCTGACGCTCAGTGAACGAAACTCAGCTTAAGGATTTTGTGTCATGAGATTATCAAAAGGATCTTCACCTAGATCCTTTTA
 4000
 ATTAAAAATGAAGTTTAAATCAATCTAAGTATATGAGTAACTTGGTCTGACAGTACCAATGCTTAATCAGTGAAGGACCTTATCTCAGCGATCTG
 AMPICILLIN RESISTANCE
 4100
 TCTATTTCGTTTCATCCATAGTGGCTGACTCCCGCTCGTGTAGATACTACGATACGGAGGCGCTTACCATCTGCGCCCACTGCTGCAATGATACCGCA
 AMPICILLIN RESISTANCE
 4200
 GACCCGCGCTCACCAGGCTCCAGATTATCAGCAATAAACCGCCAGCGGAGGGCGAGCGCAGAGTGGTCTGCAACTTTATCCGCTCCCTCAGT
 AMPICILLIN RESISTANCE

Fig. 20(B) cont.

4300
CTATTAAATTGTTGCCGGGAAGCTAGAGTAGTAGTTGCCAGTTAATAGTTTGGCGAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACAGGCTCGTC
AMPICILLIN RESISTANCE >

4400
GTTTGGTATGGCTTCATTACAGCTCCGGTTCCTAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCCCTCCG
AMPICILLIN RESISTANCE >

4500
ATCGTTGTCAGAASTAASTTGGCCGCGAGTGTATCACTCATGGTTATGGCAGCACTGCATAATTCTTCTACTGTCTATGCCATCCGTAAGATGCTTTTCTG
AMPICILLIN RESISTANCE >

4600
TGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAATACGGGATTAATACCGCGCCACATAG
AMPICILLIN RESISTANCE >

4700
CAGAACTTTAAAASTGCTCATCATTTGAAACGTTCTTCGGGCGGAACTCTCAGGATCTTACCGCTGTTGAGATCCAATTCGATSTAACCCACTCGT
AMPICILLIN RESISTANCE >

4800
GCACCCAACTGATCTTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTGAGCAAAACAGGAAGGCAAAATGCCCGCAAAAAGGGAAATAGGGCGACAC
AMPICILLIN RESISTANCE >

4900
GGAATGTGAACTACTCATCTCTTCCTTTTCAATATTATTGAAGCATTATCAGGGTTATGTCTCATGAGCGGATACATATTGAATGTATTAGAA
AMPICILLIN RESISTANCE >

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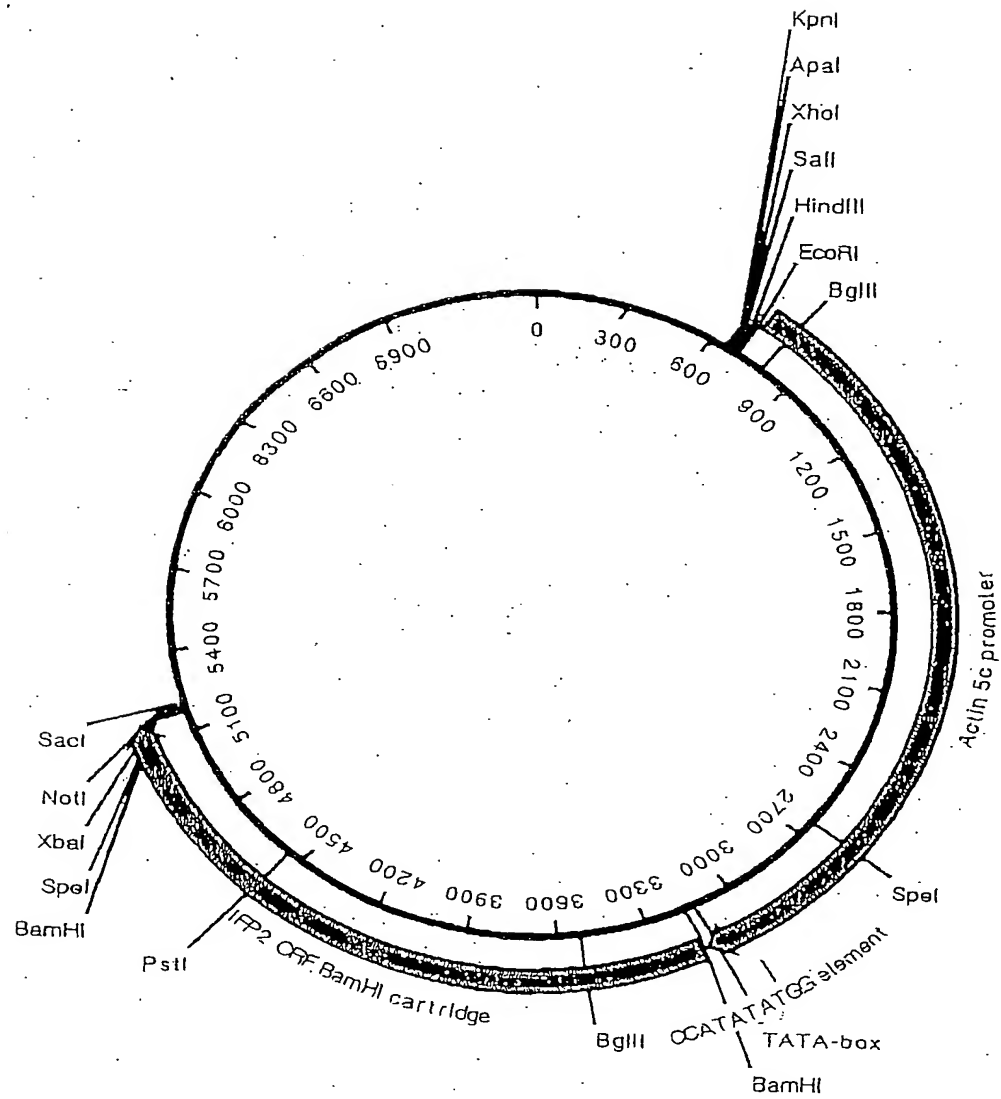


FIG. 21 (A)

100
CTAAATTGTAAGCGTTAAATTTTGTAAATTCGCGTTAAATTTTGTAAATCAGCTCATTTTTAAACCAATAGGCCGAAATCGGCAAAATCCCTTAT

200
AAATCAAAAGATAGACCGAGATAGGGTTGAGTGTGTTCAGTTTGGACAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGAAGAA

300
CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCTTAATCAAGTTTTTGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCTAAAGGGAG

400
CCCCGATTTAGAGCTTGACGGGGAAGCCGCGAACGTGGCGAGAAAGGAAGGGAAGAAAGCAGAAAGGAGCGGGCGCTAGGGCCCTGSCAAGTGTAGCG

500
GTCACGCTGCGCGTAACCACCACACCCGCGCGCTTAATGCGCGCTACAGGGCGCGTCCCATTCGCCATTGAGGCTGCGCAACTGTTGGGAGGGCGAT

600
CGGTGCGGGCTCTTCGCTATTACGCCAGCTGSCGAAAGGGGATGTGCTGCAAGGCGATTAAAGTTGGGTAAAGCCAGGGTTTTCCAGTCAAGACGTTG

700
TAAACGACGGCCAGTGAGCGCGCTAATACGACTCACTATAGGGCGAATTGGGTACCGGGCCCCCTCGAGGTGACGGTATCGATAAGCTTGATATC

800
GAATTCIAAAAAAATCAGAATGGCATCAACTCTGAATCAATCTTTGCAGATGCACTACTCTCATTTCAGTGTACATCATTTTTCCAGATCTCG
ACTIN 5C PROMOTER

900
CTGCTGTATGTGCGCCACAACCAAGACACGTTTTATGGCCATTAAAGCTGGCTGATCGTCCCAACACCAATACATATCAATATGTACATTCGAG
ACTIN 5C PROMOTER

1000
AAAGAGCGATCAAAAGAGCGTCTTCGGGCGAGTAGGAGAAATGCGGAGGAGAGGAGAACGAGCTGATCTAGTATCTCTCCACAATCCAATGCCAAGTGA
ACTIN 5C PROMOTER

1100
CCAACTGGCCATATTCGGAGCAATTTGAAGCCAATTTCCATCGCCTGGCGATCGCTCCATTCTTGGCTATATGTTTTTACCCTTCCCGGGGCCATTTTC
ACTIN 5C PROMOTER

1200
AAAGACTCGTGGTAAGATAAGATTGTGTCACCTCGCTGCTCTCTTCATTGTGCGAAGAAATGCTGAGGAATTTCCGCGATGACGTGGCGAGTATTTTGA
ACTIN 5C PROMOTER

1300
GAATGAGAATAATTGTATTATATACGAAATCAGTTAGTGGAAATTTCTACAAAACATGTTATCTATAGATAATTTGTGCAAAATATGTGACTATG
ACTIN 5C PROMOTER

1400
ACAAAGATTGTATGATATACCTTTAATGTATTCTCATTTTCTATGTATTATAATGCAATGATGATACTGATGATATTTAAGATGATGCCAGACCA
ACTIN 5C PROMOTER

1500
CAGGCTGATTTCTGCGTCTTTTGGCGAAGCGAATGCAATGTGCGGTGTGTTTTTGGAAATAGTTTCAATTTTCGGACTGTCGCTTTGATTTCAATTTTC
ACTIN 5C PROMOTER

1600
TTGGCTTATTCAAAAAGCAAGCTAAAGCCAAAAAGCGAGATGGCAATACCAATGCGGCAAAACGGTAGTGGAAAGGAAGGGGTGCGGGGCGAGCGGAAG
ACTIN 5C PROMOTER

1700
GAAGGCTGGGGCGGGGCTGGCGGGGTCTGTGGCTGGGCGCGACCTCACCGACGTTGGAGCCACTCCTTTGACCATGTGTGCGTGTGTATATTTCGTG
ACTIN 5C PROMOTER

1800
TCTGCGCACTCGCCGCTGTGTTTTTCTTTTATCTCGCTCTCTCTAGCGCATCTCGTACGCATGCTCAACGCACCGCATGTTGCCGTGTCTTTATGC
ACTIN 5C PROMOTER

1900
GTCATTTTGGCTCGAAATAGGCAATTATTTAAACAAAGATGTCAACGAAACGCTAAAAATAAATAAGTCTACAATATGGTTACTTATTGCCATGTGTG
ACTIN 5C PROMOTER

2000
TGCAGCCACGATAGCAACAAAGCAACAACACAGTGGCTTTCCCTCTTTCACTTTTGTGCAAGCGCGTGGAGCAAGACGGCAGCGGCAAGC
ACTIN 5C PROMOTER

FIG. 21(B) cont.

2100
CAATTACGCTGACAAAGAGCAGACGAAGTTTGGCCGAAAAACATCAAGGCGCTGATACGAATGCATTGGCAATAACAATTGCGATATTTAATATGTT
ACTIN 5C PROMOTER

2200
TATGAAGCTGTTTGACTTCAAAACACACAAAAAATAAACAATAATTATTTGAAGAGAATTAGGATCGGACAGCTTATCGTACGGGCTAACAGC
ACTIN 5C PROMOTER

2300
ACACCGAGACGAAATAGCTTACCTGACGCTCAGCCCTCTGGAAGAACTGCCGCCAGCAGCAGATGCAGAGGACGACACATAGAGTAGCGGAGTAGGCCA
ACTIN 5C PROMOTER

2400
GCSTAGTACGCATGTGCTTGTGTGTGAGGCGTCTCTCTCTCTGTTTGGCAAAACGCATAGACTGCACTGAGAAAAATCGATTACCTATTTTTTA
ACTIN 5C PROMOTER

2500
TGAATGAATATTTGCACTATTACTATTCAAACTATTAGATAGCAATTCATTCAATAGCCAAATACTATACCACCTGACCGGATGCAACGAAATGATCA
ACTIN 5C PROMOTER

2600
ATTTGAGCAAAAAATGCTGCATATTAGGACGGCATCATTATAGAAATGCTTCTGTGTGTACTTTTCTCTCTGCTGGCAGCTGTTTCGCCGTATTGTT
ACTIN 5C PROMOTER

2700
AAAACCGGCTTAAGTTAAGTGTGTTTTCTACGACTAGTGAATGCCCTACTAGAGATGTGTGTGACAAATGTCCCTGAATAACCAATTGAGTGCAG
ACTIN 5C PROMOTER

2800
ATAGCAGTAACGTAAGCTAATATGATATTATTTAACTGTAATGTTTAAATATCGCTGGACATTACTAATAAACCCACTATAAACACATGTACATATGT
ACTIN 5C PROMOTER

2900
ATGTTTGGCATAAATGAGTAGTTGGGAAAAATGTGTAAAGCACCGTGACCATCACAGCATAAAGATAACAGCTGAAGTATCGAATATGAGTAAC
ACTIN 5C PROMOTER

3000
CCCCAAATTGAATCACATGCCGCAACTGATAGGACCCATGGAAGTACACTCTTCATGGCGATATACAAGACACACAGCAGACACCCAGTTGCGGA
ACTIN 5C PROMOTER

>CCATATAGG_element

3100
GGAATTCTCCGTAAATGAAAACCCAAATCGGCGAACAATTCATACCCATATATGTTAAAGTTTGAACCGGACTTGAGAGCGGAGACATTGCGGGCTGA
ACTIN 5C PROMOTER

>TATA-box

3200
TAAGGTTTTCAGCGCTAAGCGGGCTTTATAAAACGGGCTGCGGGACCAAGTTTTCATATCGGATCCATATAATAAAATGAGTAGTTCTTTAGACGATGAGC
ACTIN 5C PROMOTER IFP2 ORF BAMHI CARTRIDGE

3300
ATACTCTCTCTCTCTCTGCAAAGCGATGACGAGCTTGTGTGAGGATTCTGACAGTGAATAATCAGATCAGGTAAATGAGTATGCTCCAGAGCGA
IFP2 ORF BAMHI CARTRIDGE

3400
TACAGAAGAGCGTTTATAGATGAGGTACATGAAGTGCAGCCACGTCAGCGGTAGTGAATATTAGACGACAAATGTTATTGACACACAGGTTCT
IFP2 ORF BAMHI CARTRIDGE

3500
TCATGGCTTCTAACAGAACTTTGACCTTGCCACAGAGGACTATTAGAGGTAAAGATAAACATTGTTGGTCAACTTCAPAGTCCAGAGCGGTAGCCGAG
IFP2 ORF BAMHI CARTRIDGE

3600
TCTCTGCACTGAACATTGTCAGATCTCAAGAGGTCCGACGCGTATGTGCCGCAATATATATACCCACTTTTATGCTTCAACATTTTTTACTGATGA
IFP2 ORF BAMHI CARTRIDGE

3700
GATAATTTCCGAAATTGTAATATGGACAAATGCTGAGATATCATTGAACGTCGGGAATCTATGACAGTCTACATTTCGTGACCGAATGAGATGA
IFP2 ORF BAMHI CARTRIDGE

Fig. 21(B) cont.

ATCTATGCTTTCTTTGGTATTCTGTAATGACAGCAGTGAAGAAAGATAACCATGTGCCAGATGACCTCTTTGATCGAICTTTGTCAATGGTGTACG
3800
IFP2 ORF BAMHI CARTRIDGE >

TCTCTGTAATGAGTCGTGATCGTTTTGATTTTTTGATACGATGCTTGAATGGATGACAAAGTATACGGCCCACTTCGAGAAAACGATGTATTTAC
3900
IFP2 ORF BAMHI CARTRIDGE >

TCCTGTTAGAAAATATGGGATCTCTTTATCCATCACTGCAATCAAAATTACACTCCAGGGGCTCATTGACCATAGATGAACAGTTACTTGGTTTAA
4000
IFP2 ORF BAMHI CARTRIDGE >

GGACGGTGTCCGTTTAGGATGTATATCCCAAACAGCCAAAGTAAGTATGGAAATAAAATCCTCATGATGTGTGACAGTGGTACGAAGTATATGATAAATG
4100
IFP2 ORF BAMHI CARTRIDGE >

GAATGCCCTTATTGGGAAGAGGACACAGACCAACGGAGTACCACTCGGTGAATACTACGTGAAGGAGTTATCAAGCCTGTGCACGGTAGTTGTCTGTA
4200
IFP2 ORF BAMHI CARTRIDGE >

TATTACGTGTGACAATTGGTTACCTCAATCCCTTTGGCAAAAACTTACTACAGAACCCTATAAGTTAACCAATTGTGGGAACCGTGGCATCAAAACA
4300
IFP2 ORF BAMHI CARTRIDGE >

CGCGAGATACCGGAAGTACTGAAAACAGTCGCTCCAGGCCAGTGGGAACATCATGTTTTGTTTTGACGGACCCCTTACTCTCGTCTCATATAAACCGA
4400
IFP2 ORF BAMHI CARTRIDGE >

AGCCAGCTAAGATCGTATCTTATTATCATCTTGTGATGAGGATGCTTCTATCAACGAAAGTACCGGTAACCGCAATGGTTATGTATTATAATCAAC
4500
IFP2 ORF BAMHI CARTRIDGE >

TAAAGGCGGAGTGGACACGCTAGACCAATGTGTTCTGTGATGACCTGCAAGTAGGAAGACGAATAGGTGGCTATGGCAATTATGTACGGAATGATAAAC
4600
IFP2 ORF BAMHI CARTRIDGE >

ATTGCCGTGCATAAATCTTTTATATATACAGCCATAATGTCAAGTAGCAAGGAGAAAGGTTCAAGTCGCAAAAAATTATGAGAAACCTTTACATGA
4700
IFP2 ORF BAMHI CARTRIDGE >

GCTTGACGTATCGTTTATGCGTAAGCGTTTGAAGCTCTACTTTGAAGAGATATTTCGCGATAATATCTCTAATATTTTGCCTAAATGAAGTGCCTGG
4800
IFP2 ORF BAMHI CARTRIDGE >

TACATCAGATGACAGTACTGAAGAGCCAGTAATGAAAAACGTAAGTACTTACTTACTTACTGCCCCCTCTAAATAAGGCGAAAGGCAAAATGCATCGTGCAA
4900
IFP2 ORF BAMHI CARTRIDGE >

AAATGCAAAAAAGTATTGTGCGAGAGCATAATATGATATGTGCCAAAGTGTCTTCTGACTGACTTAAAGTATAATTGTCTTCTATGATAAGTT
5000
IFP2 ORF BAMHI CARTRIDGE >

AAGCTAATTACTTATTTTATAATCAACATGACTGTTTTTAAAGTACAAATAAGTTTATTTTGTAAAAGAGAGAAATGTTTAAAGTTTGTACTTTA
5100
IFP2 ORF BAMHI CARTRIDGE >

GAAGAAATTTTGAATTTTGTTTTTTTTAAATAAATAAACAATAAATAAATTGTTGTTGAATTTGGATCCACTAGTTCTAGAGCGGCCGCCACCGC
5200
IFP2 ORF BAMHI CARTRIDGE >

GGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAGGGTAAATGCGCGCTTGGCGTAATCATGGTCATAGCTGTTTCTGTGTGAAATGTTTATCGCTCAC
5300

AATTCCACACACATACGAGCCGGAAGCATAAAGTGTAAAGCCTGGGGTGCCTAATGAGTGAAGCTAATCAATTAATTGCGTTGCGCTCACTGCCGCT
5400

TTCCAGTCGGGAACCTGTGTECCAGCTGCATTAAATGAATCGGCCAACCGCGGGAGAGCGCGTTTTCGATATGGGCGCTCTTCCGCTTCCCTCGCTCA
5500

CTGACTCGCTGCGCTCGGTCGTTGCTGCTGCGCGAGCGGTATCAGCTCACTCAAGGCGGTAATACGGTTATCCACAGAAACAGGGGATAACGAGGAAA
5600

GAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCTGCTGCGCTTTTCCATAGGCTCGGCCCGCTGACGAGCATCAAAA
5700

FIG. 21(B) cont.

5800
 AATCERCGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAGATACAGGCGTTTCCCCCTGGAAGCTCCCTCGTGGCTCTCCTGTTCGACCC
 5900
 TSCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTACGCTGTAGGTAICTCAGTTCGGTGTAGGTGGTTCG
 6000
 CTCGAAGCTGGGCTGTGTGCACGAACCCCCGTTTCAGCCGACCGCTGGCGCTTATCCGGTAACCTATCGTCTTGAGTCCAACCCGGTAAGACAGGACTTA
 6100
 TCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTTCTTGAAGTGGTGGCTTAACCTACGGCTACACTA
 6200
 GAAGSACAGTATTTGGTATCTGGCTCTGCTGAAGCCAGTTACCTTCGGAAGAGAGTTGGTAGCTCTTGATCCGGCAAAACAAACCACCCTGGTAGCGG
 6300
 TGGTTTTTTTGTTCGAAGCAGCAGATTACGGCGAGAAAAAGGATCTCAAGAGATCCTTTCATCTTTTCTACGGGCTCTEAGCTCAGTGGAAAGAA
 6400
 AACTCAGCTAAGGGATTTTGGTCATGAGATATCAAAAAGCATCTTACCTAGATCCCTTTAAATTAAAAATGAAGTTTAAATCAATCTAAGTATAT
 6500
 ATGAGTAACTTGGTCTGACAGTTACCAATGCTTATCAGTGAAGCACCTATCTCAGCGATCTGTCTATTTCTGTCATCCATAGTTGGCTGACTCCCGCT
 6600
 CGTGTAGATAACTACGCTACGGGAGGGCTTACCATCTGGCCCCAGTGTGCAATGATAACCGGAGAGCCACGCTCAGCGGCTCCAGATTATCAGCAATA
 6700
 AACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCTGCAACTTTATCCGCTCCATCCAGTCTATTAATTTGTGCGGGGAGGCTAGAGTAAAGTAGTT
 6800
 CGCCAGTTAATAGTTTGGCAACGTTGTGCGATTGCTACAGGCACTCGTGGTGTACGGCTCGTCTGTTGGTATGGCTTCATTACAGCTCCGGTTCCCAAGC
 6900
 ATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAGCGGTAGCTCCTTCGGTCTCCGATCGTTGTGCAAGTAAGTTGGCCGAGTGTATCA
 7000
 CTCATGGTTATGGCAGCACTGCATAATCTCTTACTGTGATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAAGTACTCAACCAAGTCATTCTGAGAAT
 7100
 AGTGTATGGCGGACCGAGTTGCTCTTGGCCGGCGTCAATACGGGATAATACGGCGCCACATAGCAGAACTTTAAAGTGTCTCATCTTGAAGAACGTTT
 7200
 TTCGGGGCGAAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTTTACTTTTACC
 7300
 AGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGGAATAAGGGCGACACGGAATGTTGAATACTCAIACCTCTTCCTTTTCAAT
 7400
 ATTAITGAAGCATTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATGTAATTAAGAAAAATAACAAATAGGGGTTCCGCGCACATTTCCCGG
 AAGTGGCAC (SEQ ID NO: 67)

pCospa-hs-o

Sequence Range: 1 to 10333

100

AAGCTTGGGCTGCAGGTCGACGGATCCAAATTCAACAAACAATTTATTTATGTTTAT
TTATTTATTAAAAAAAACAAAACTCAAAATTTCTTCTAAAG

200

TAACAAAACCTTTTAAACATTCTCTCTTTTACAAAAATAAACTTATTTTGTACTTTAAA
AACAGTCATGTTGTATTATAAAATAAGTAATTAGCTTAACTT

300

ATACATAATAGAAACAAATTATACTTATTAGTCAGTCAGAAACAACTTTGGCACATA
TCAATATTATGCTCTCGACAAATAACTTTTTTGCATTTTTTGC

< _____ PIGGYBAC ORF

400

ACGATGCATTTGCCTTTTCGCCTTATTTTAGAGGGGCGAGTAAGTACAGTAAGTACGTT
TTTTCATTACTGGCTCTTCAGTACTGTCATCTGATGTACCAGG

< _____ PIGGYBAC ORF

500

CACTTCATTTGGCAAAATATTAGAGATATTATCGCGCAAATATCTCTTCAAAGTAGG
AGCTTCTAAACGCTTACGCATAAACGATGACGTCAGGCTCATG

< _____ PIGGYBAC ORF

600

TAAAGGTTTCTCATAAATTTTTTTCGACTTTGAACCTTTTCTCCCTTGCTACTGACATT
ATGGCTGTATATAATAAAAGAATTTATGCAGGCAATGTTTA

FIG. 22

< _____ PIGGYBAC ORF

700

TCATTCCGTACAATAATGCCATAGGCCACCTATTCGTCTTCCTACTGCAGGTCATCAC
AGAACACATTTGGTCTAGCGTGTCCACTCCGCCTTTAGTTTG

< _____ PIGGYBAC ORF

800

ATTATAATACATAACCATTTGCGGTTTACCGGTACTTTCGTTGATAGAAGCATCCTCA
TCACAAGATGATAATAAGTATAACCATCTTAGCTGGCTTCGGT

< _____ PIGGYBAC ORF

900

TTATATGAGACGAGAGTAAGGGGTCCGTCAAAACAAAACATCGATGTTCCCACTGG
CCTGGAGCGACTGTTTTTCAGTACTTCCGGTATCTCGCGTTTGT

< _____ PIGGYBAC ORF

1000

TTGATCGCACGGTTCCCACAATGGTTAACTTATACGGTTCTTGTAGTAAGTTTTTGC
CAAAGGGATTGAGGTGAACCAATTGTCACACGTAATATTACG

< _____ PIGGYBAC ORF

1100

ACAACTACCGTGACAGGCTTTGATAACTCCTTCACGTAAGTATTACCGAGTGGTAC
TCCGTTGGTCTGTGTTCTCTCCCAAATAAGGCATTCCATT

< _____ PIGGYBAC ORF

FIG. 22

1200

ATCATATACTTCGTACCACTGTACACATCATGAGGATTTTATTCCATACTTACTTG
GCTTGTTTGGGATATACATCCTAAACGGACACCGTCCTCTAA

< _____ PIGGYBAC ORF

1300

AACCAAGTAACTGTTTCATCTATGGTCAAATGAGCCCCTGGAGTGTAATTTTGTATGC
ACTGATGGATAAAGAGATCCCATATTTTCTAACAGGAGTAAA

< _____ PIGGYBAC ORF

1400

TACATCGTTTTCTCGAAGTGTGGGCCGTATACTTTTGTTCATCCATTCTAAGACATCGT
ATCAAAAAATCAAAACGATCACGACTCATTACAGAGACGTAC

< _____ PIGGYBAC ORF

1500

ACCATTGACAAAGATCGATCAAAGAGGTCATCTGTGGACATGTGGTTATCTTTTCTC
ACTGCTGTCATTACCAGAATACCAAAGAAAGCATAGATTTTCAT

< _____ PIGGYBAC ORF

1600

CTTCATTTCGTGTCACGAAATGTAGCACCTGTCATAGATTCCCGACGTTTCAATGATAT
CTCAGCATTTGTCCATTTTACAATTTCCGAAATTATCTCATC

< _____ PIGGYBAC ORF

1700

AGTAAAAAATAGTTTGAAGCATAAAAGTGGGTCATATATATTGCGGCACATACGCG
TCGGACCTCTTTGAGATCTGACAATGTTTCAGTGCAGAGACTCGG

FIG. 22

< _____ PIGGYBAC ORF

 1800
 CTACGCCTCGTGGACTTTGAAGTTGACCAACAATGTTTATTCTTACCTCTAATAGTCC
 TCTGTGGCAAGGTCAAGATTCTGTTAGAAGCCAATGAAGAAC
 < _____ PIGGYBAC ORF

 1900
 CTGGTTGTTCAATAACATTTTGTTCGTCTAATATTTCACTACCGCTTGACGTTGGCTG
 CACTTCATGTACCTCATCTATAAACGCTTCTTCTGTATCGCT
 < _____ PIGGYBAC ORF

 2000
 CTGGACGTCATCTTCACTTACGTGATCTGATATTTCACTGTCAGAATCCTCACCAACA
 AGCTCGTCATCGCTTTGCAGAAGAGCAGAGAGGATATGCTCA
 < _____ PIGGYBAC ORF

 2100
 TCGTCTAAAGAACTACCCATTTTATTATATAGGATCCCCGACACCAGACCAACTGGT
 AATGGTAGCGACCGGCGCTCAGCTGGAATTAGGCCTTCTAGAC
 < _____ PIGGYBAC ORF _____

 2200
 CGCGGCCGCAGATCTGTTAACGAATTCCCAATTCCCTATTCAGAGTTCTCTTCTTGTA
 TTCAATAATTACTTCTTGGCAGATTTCAGTAGTTGCAGTTGA
 < _____ HSP 70
 PROMOTER _____

 2300

FIG. 22

TTTACTTGGTTGCTGGTTACTTTTAATTGATTCACCTTAACTTGCACCTTACTGCAGAT
TGTTTAGCTTGTTTACGCTGCGCTTGTTTATTTGCTTAGCTT

<_____HSP 70
PROMOTER_____

2400

TCGCTTAGCGACGTGTTCACTTTGCTTGTTTGAATTGAATTGTCGCTCCGTAGACGAA
GCGCTCTATTTATACTCCGGCGCTCTTTTCGCGAACATTCTGA

<_____HSP 70
PROMOTER_____

2500

GGCGCGCTCTCTCGAACCAACGAGAGCAGTATGCCGTTTACTGTGTGACAGAGTGA
GAGAGCATTAGTGCAGAGAGGGAGACCCAAAAAGAAAAGAGAGA

<_____HSP 70
PROMOTER_____

2600

ATAACGAATAACGGCCAGAGAAATTTCTCGAGTTTTCTTCTGCCAAACAAATGACCT
ACCACAATAACCAGTTTGTTTTGGGATTCTAGGGGGATCGGGG

<_____HSP 70
PROMOTER_____

2700

ATCAATTCTAGTATGTATGTAAGTTAATAAAACCCTTTTTTGGAGAATGTAGATTAA
AAAAACATATTTTTTTTTTATTTTTTACTGCACTGGATATCA

<_____

2800

TTGAACTTATCTGATCAGTTTTAAATTTACTTCGATCCAAGGGTATTTGAAGTACCAG
GTTCTTTCGATTACCTCTCACTCAAAATGACATTCCACTCAA

FIG. 22

2900

AGTCAGCGCTGTTTGCCTCCTTCTCTGTCCACAGAAATATCGCCGTCTCTTTCGCCGC
TGGTCCGCTATCTCTTTCGCCACCGTTTGTAGCGTTACCTA

3000

CGGTCAATGTCCGCCTTCAGTTGCACTTTGTCAGCGGTTTCGTGACGAAGCTCCAAG
CGGTTTACGCCATCAATTAAACACAAAGTGCTGTGCCAAACT

3100

CCTCTCGCTTCTTATTTTTGTTTGTGTTTTGAGTGATTGGGGTGGTGATTGGTTTTGGG
TGGGTAAGCAGGGGAAAGTGTAAGAAATCCCGGCAATGGGC

3200

CAAGAGGATCAGGAGCTATTAATTCGCGGAGGCAGCAAACACCCATCTGCCGAGCA
TCTGAACAATGTGAGTAGTACATGTGCATACATCTTAAGTTCAC

3300

TTGATCTATAGGAACTGCGATTGCAACATCAAATTGTCTGCGGCGTGAGAACTGCGA
CCCACAAAAATCCCAAACCGCAATCGCACAAACAAATAGTGAC

3400

ACGAAACAGATTATTCTGGTAGCTGTGCTCGCTATATAAGACAATTTTAAAGATCAT
ATCATGATCAAGACATCTAAAGGCATTCAATTTTCGACTACATT

3500

CTTTTTTACAAAAAATATAACAACCAGATATTTTAAGCTGATCCTAGATGCACAAAA
AATAAATAAAAGTATAAACCTACTTCGTAGGATACTTCGTTTT

3600

GTTCGGGGTTAGATGAGCATAACGCTTGTAGTTGATATTTGAGATCCCCTATCATTG

FIG. 22

CAGGGTGACAGCGGAGCGGCTTCGCAGAGCTGCATTAACCAGG

3700

GCTTCGGGCAGGCCAAAACTACGGCACGCTCCTGCCACCCAGTCCGCCGGAGGAC
TCCGGTTCAGGGAGCGGCCAACTAGCCGAGAACCTCACCTATGC

3800

CTGGCACAATATGGACATCTTTGGGGCGGTCAATCAGCCGGGCTCCGGATGGCGGC
AGCTGGTCAACCGGACACGCGGACTATTCTGCAACGAGCGACAC

3900

ATACCGGCGCCAGGAAACATTTGCTCAAGAACGGTGAGTTTCTATTCGCAGTCGGC
TGATCTGTGTGAAATCTTAATAAAGGGTCCAATTACCAATTTG

4000

AAACTCAGTTTGCGGCGTGGCCTATCCGGGCGAACTTTTGGCCGTGATGGGCAGTTC
CGGTGCCGGAAGACGACCCTGCTGAATGCCCTTGCCCTTTCGA

4100

TCGCCGCAGGGCATCCAAGTATCGCCATCCGGGATGCGACTGCTCAATGGCCAACCT
GTGGACGCCAAGGAGATGCAGGCCAGGTGCGCCTATGTCCAGC

4200

AGGATGACCTCTTTATCGGCTCCCTAACGGCCAGGGAACACCTGATTTTCCAGGCCA
TGGTGCGGATGCCACGACATCTGACCTATCGGCAGCGAGTGGC

4300

CCGCGTGATCAGGTGATCCAGGAGCTTTCGCTCAGCAAATGTCAGCACACGATCAT
CGGTGTGCCCGGCAGGGTGAAAGGTCTGTCCGGCGGAGAAAGG

4400

FIG. 22

AAGCGTCTGGCATTTCGCCTCCGAGGCACTAACCGATCCGCCGCTTCTGATCTGCGAT
GAGCCACCTCCGGACTGGACTCATTTAACGCCACAGCGTCG

4500

TCCAGGTGCTGAAGAAGCTGTCGCAGAAGGGCAAGACCGTCATCCTGACCATTTCAT
CAGCCGTCTTCCGAGCTGTTTGAGCTCTTTGACAAGATCCTTCT

4600

GATGGCCGAGGGCAGGGTAGCTTTCTTGGGCACTCCCAGCGAAGCCGTCGACTTCTT
TTCCTAGTGAGTTCGATGTGTTTATTAAGGGTATCTAGCATTA

4700

CATTACATCTCAACTCCTATCCAGCGTGGGTGCCAGTGTCCTACCAACTACAATCC
GGCGGACTTTTACGTACAGGTGTTGGCCGTTGTGCCCGGACGG

4800

GAGATCGAGTCCCGTGATCGGATCGCCAAGATATGCGACAATTTTGCTATTAGCAAA
GTAGCCCGGGATATGGAGCAGTTGTTGGCCACCAAAAATTTGG

4900

AGAAGCCACTGGAGCAGCCGGAGAATGGGTACACCTACAAGGCCACCTGGTTCATG
CAGTTCCGGGCGGTCCTGTGGCGATCCTGGCTGTCGGTGCTCAA

5000

GGAACCACTCCTCGTAAAAGTGCGACTTATTCAGACAACGGTGAGTGGTTCCAGTGG
AAACAAATGATATAACGCTTACAATTCTTGGAACAAATTCGC

5100

TAGATTTTAGTTAGAATTGCCTGATTCCACACCCTTCTTAGTTTTTTTCAATGAGATG
TATAGTTTATAGTTTTGCAGAAAATAAATAAATTCATTAA

FIG. 22

5200

CTCGCGAACATGTTGAAGATATGAATATTAATGAGATGCGAGTAACATTTTAATTTG
CAGATGGTTGCCATCTTGATTGGCCTCATCTTTTTGGGCCAAC

5300

AACTCACGCAAGTGGGCGTGATGAATATCAACGGAGCCATCTTCCTCTTCCTGACCA
ACATGACCTTTCAAAACGTCTTTGCCACGATAAATGTAAGTCT

5400

TGTTTAGAATACATTTGCATATTAATAATTTACTAACTTTCTAATGAATCGATTTCGAT
TTAGGTGTTACCTCAGAGCTGCCAGTTTTTATGAGGGAGGC

5500

CCGAAGTCGACTTTATCGCTGTGACACATACTTTCTGGGCAAAACGATTGCCGAATT
ACCGCTTTTCTCACAGTGCCACTGGTCTTCACGGCGATTGCC

5600

TATCCGATGATCGGACTGCGGGCCGGAGTGCTGCACTTCTTCAACTGCCTGGCGCTG
GTCACCTCTGGTGGCCAATGTGTCAACGTCCTTCGGATATCTAA

5700

TATCCTGCGCCAGCTCCTCGACCTCGATGGCGCTGTCTGTGGGTCCGCCGGTTATCAT
ACCATTCCTGCTCTTTGGCGGCTTCTTCTTGAACCTCGGGCTC

5800

GGTGCCAGTATACCTCAAATGGTTGTCTGTACCTCTCATGGTTCCGTTACGCCAACGA
GGGTCTGCTGATTAACCAATGGGCGGACGTGGAGCCGGGCGAA

5900

ATTAGCTGCACATCGTCGAACACCACGTGCCCCAGTTCGGGGCAAGGTCATCCTGGA

FIG. 22

GACGCTTAACTTCTCCGCCGCCGATCTGCCGCTGGACTACGTGG

6000

GTCTGGCCATTCTCATCGTGAGCTTCCGGGTGCTCGCATATCTGGCTCTAAGACTTCG
GGCCCGACGCAAGGAGTAGCCGACATATATCCGAAATAACTG

6100

CTTGTTTTTTTTTTTACCATTATTACCATCGTGTTTACTGTTTATTGCCCCCTCAAAAA
GCTAATGTAATTATATTTGTGCCAATAAAAACAAGATATGA

6200

CCTATAGAATACAAGTATTTCCCTTCGAACATCCCCACAAGTAGACTTTGGATTG
TCTTCTAACCAAAAGACTTACACACCTGCATACCTTACATCAA

6300

AAACTCGTTTATCGCTACATAAAACACCGGGATATATTTTTTATACATACTTTTCA
AATCGCGCGCCCTCTTCATAATTCACCTCCACCACACCACGT

6400

TTCGTAGTTGCTCTTTCGCTGTCTCCACCCGCTCTCCGCAACACATTCACCTTTTGTT
CGACGACCTTGGAGCGACTGTCGTTAGTCCGCGCGATTCTG

6500

GTTGCTCAAATGGTTCCGAGTGGTTCATTTGCTCTCAATAGAAATTAGTAATAAAT
ATTTGTATGTACAATTTATTTGCTCCAATATATTTGTATATAT

6600

TTCCCTCACAGCTATATTTATTCTAATTTAATATTATGACTTTTTTAAGGTAATTTTTTG
TGACCTGTTCCGAGTGATTAGCGTTACAATTTGAACTGAAA

6700

FIG. 22

GTGACATCCAGTGTTTGTTCCTTGTGTAGATGCATCTCAAAAAAATGGTGGGCATAA
TAGTGTTGTTTATATATATCAAAAATAAGAACTATAATAATAA

6800

GAATACATTTAATTTAGAAAATGCTTGGATTTCCTGGAAGTAGAATTAATTCGGCT
GCTGCTCTAAACGACGCATTTTCGTACTCCAAAGTACGAATTTT

6900

TTCCTCAAGCTCTTATTTTCATTAAACAATGAACAGGAECTAACGCACAGTCACGT
TATTGTTTACATAAATGATTTTTTTTACTATTCAAACCTACTC

7000

TGTTTGTGTACTCCCACTGGTATAGCCTTCTTTTATCTTTTCTGGTTCAGGCTCTATCA
CTTACTAGGTACGGCATCTGCGTTGAGTCGCCTCCTTTTA

7100

AATGTCTGACCTTTTGCAGGTGCAGCCTTCCACTGCGAATCTTTAAAGTGGGTATCA
CAAATTTGGGAGTTTTACCAAGGCTGCACCCAAGGCTCTGCT

7200

CCCACAATTTTCTCTTAATAGCACACTTCGGCACGTGAATTAATTTTACTCCAGTCAC
AGCTTTGCAGCAAAATTTGCAATATTTCATTTTTTTTTTATTC

7300

CACGTAAGGGTTAATGTTTTCAAAAAAAAATTCGTCCGCACACAACCTTTCCTCTCA
ACAAGCAAACGTGCACTGAATTTAAGTGTATACTTCGGTAAGC

7400

TTCGGCTATCGACGGGACCACCTTATGTTATTTTCATCATGGGCCAGACCCACGTAGT
CCAGCGGCAGATCGGCGGCGGAGAAGTTAAGCGTCTCCAGGAT

FIG. 22

7500

GACCTTGCCCGAACTGGGGCACGTGGTGTTCGACGATGTGCAGCTAATTCGCCCCGG
CTCCACGTCCGCCCATTTGGTTAATCAGCAGACCCTCGTTGGCG

7600

TAACGGAACCATGAGAGGTACGACAACCATTTGAGGTATACTGGCACCGAGCCCGA
GTTCAAGAAGAAGGCGTTTTTCCATAGGCTCCGCCCCCTGACG

7700

AGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAA
AGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCC

7800

TGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTG
GCGCTTTCTCAATGCTCACGCTGTAGGTATCTCAGTTCGGTG

7900

TAGGTCGTTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGC
TGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAA

8000

GACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGG
TATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTA

8100

CGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTT
CGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAACCACC

8200

GCTGGTAGCGGTGGTTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGG

FIG. 22

ATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTC

8300

AGTGGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATC
TTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTAAATCAAT

8400

CTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGC
ACCTATCTCAGCGATCTGTCTATTTCTGTTTCATCCATAGTTGCC

8500

TGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGT
GCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATT

8600

TATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAACT
TTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGAAGCTAG

8700

AGTAAGTAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTTGCCATTGCTACAGGCAT
CGTGGTGTCACGCTCGTCGTTTGGTATGGCTTCATTCAGCTCC

8800

GGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAGCGGTT
AGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCG

8900

CAGTGTTATCACTCATGGTTATGGCAGCACTGCATTAATTCTCTTACTGTCATGCCATC
CGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTC

9000

FIG. 22

ATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAATACGGGA
TAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATT

9100

GGAAAACGTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCGCTGTTGAGATCCAGT
TCGATGTAACCCACTCGTGCACCCAAGTATCTTCAGCATCTT

9200

TTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAA
AAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTT

9300

CCTTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATA
TTTGAATGTATTTAGAAAAATAAACAAATAGGGGTTCCGCGC

9400

ACATTTCCCCGAAAAGTGCCACCTGACGTCTAAGAAACCATTATTATCATGACATTA
ACCTATAAAAATAGGCGTATCACGAGGCCCTTTCGTCTCGCGC

9500

GTTTCGGTGATGACGGTGAAAACCTCTGACACATGCAGCTCCCGGAGACGGTCACA
GCTTGTCTGTAAGCGGATGCCGGGAGCAGACAAGCCCGTCAGGG

9600

CGCGTCAGCGGGTGTTGGCGGGTGTCGGGGCTGGCTTAACTATGCGGCATCAGAGC
AGATTGTACTGAGAGTGCACCATATGCGGTGTGAAATACCGCAC

9700

CGAATCGCGCGGAACTAACGACAGTCGCTCCAAGGTCGTGGAACAAAAGGTGAATG
TGTTGCGGAGAGCGGGTGGGAGACAGCGAAAGAGCAACTACGAA

FIG. 22

9800

ACGTGGTGTGGTGGAGGTGAATTATGAAGAGGGCGCGCGATTTGAAAAGTATGTAT
ATAAAAAATATATCCCGGTGTTTTATGTAGCGATAAACGAGTTT

9900

TTGATGTAAGGTATGCAGGTGTGTAAGTCTTTTGGTTAGAAGACAAATCCAAAGTCT
ACTTGTGGGGATGTTTGAAGGGGAAATACTTGTATTCTATAGG

10000

TCATATCTTGTTTTTATTGGCACAAATATAATTACATTAGCTTTTTTGAGGGGGCAATA
AACAGTAAACACGATGGTAATAATGGTAAAAAAAAAAAAACAAG

10100

CAGTTATTTTCGGATATATGTCGGCTACTCCTTGCGTCGGGGCCCGAAGTCTTAGAGCC
AGATATGCGAGCACCCGGAAGCTCACGATGAGAATGGCCAGAC

10200

CATGATGAAATAACATAAGGTGGTCCCGTCGGCAAGAGACATCCACTTAACGTATG
CTTGCAATAAGTGCGAGTGAAAGGAATAGTATTCTGAGTGTCGT

10300

ATTGAGTCTGAGTGAGACAGCGATATGATTGTTGATTAACCCTTAGCATGTCCGTGG
GGTTTGAATTAACATATAATTAATTAGACGAAATTATTTT

AAAGTTTTATTTTAAATAATTTGCGAGTACGCA (SEQ ID NO: 68)

FIG. 22

Fig. 23

<i>Natural piggyBac orf</i>	1	ATGGGTTAGTT	CTTTAGACGA	TGAGCATA TC	CTCTCTGCTC	TTC TGCAAAG
<i>Optimized piggyBac orf</i>	1	ATGGGTTAGca	gccTgGA tGA	TGAaCATA TC	CTgagcGCgC	TgCTGCAgAG
<i>Natural piggyBac orf</i>	51	CGATGACGAG	CTTGTTGGTG	AGGATTCTGA	CAGTGAAATA	TCAGATCACG
<i>Optimized piggyBac orf</i>	51	CGAaGAcGAa	CTgGTTGGTG	AaGATagcGA	cAGcGAAATc	agcGATCACG
<i>Natural piggyBac orf</i>	101	TAAGTGAAAG	TGACGTCCAG	AGCGATACAG	AAGAAGCGTT	TATAGATGAG
<i>Optimized piggyBac orf</i>	101	TgAGcGAAGA	cGAcGT tCAG	AGCGATACcG	AAGAAGCGTT	cATcGAcGAa
<i>Natural piggyBac orf</i>	151	GTACATGAAG	TGCAGCCAAC	GTC AAGCGGT	AGTGAAATAT	TAGACGAACA
<i>Optimized piggyBac orf</i>	151	GT tCAcGAAG	TGCAGCCgAC	cagcAGCGGT	AGcGAAATcc	TgGA tGAACA
<i>Natural piggyBac orf</i>	201	AAATGTTATT	GAACAACCAG	GTTCTTCATT	GGCTTCTAAC	AGAATCTTGA
<i>Optimized piggyBac orf</i>	201	gAAcGTTATc	GAACAgCCgG	GTagcagccT	GGCgagcAAC	cGTATCctGA
<i>Natural piggyBac orf</i>	251	CCTTGCCACA	GAGGACTATT	AGAGGTAAGA	ATAAACAATTG	TTGGTCAACT
<i>Optimized piggyBac orf</i>	251	CCcTGCCgCA	GcGcACcATc	cG tGGTAAaA	AcAAACA cTG	TTGGagcACc
<i>Natural piggyBac orf</i>	301	TCAAAGTCCA	CGAGGCGTAG	CCGAGTCTCT	GCACTGAACA	TTGTCAGATC
<i>Optimized piggyBac orf</i>	301	agcAAaagCA	CccGcCGTAG	CCG tGT t.agc	GCgCTGAACA	TTGT t cG t ag
<i>Natural piggyBac orf</i>	351	TCAAAGAGGT	CCGACGCGTA	TGTGCCGCAA	TATATATGAC	CCACTTTTAT
<i>Optimized piggyBac orf</i>	351	cCAgcG tGGT	CCGACcCGTA	TGTGCCGCAA	cATcTAcGA t	CCgCTgcTgT
<i>Natural piggyBac orf</i>	401	GCTTCAAAC	ATTTTTTACT	GATGAGATAA	TTTCGGAAAT	TGTAAAAATGG
<i>Optimized piggyBac orf</i>	401	GCTTCAAAC	gTTcTTcACc	GATGAaATcA	TcagcGAAAT	cGTgAAATGG
<i>Natural piggyBac orf</i>	451	ACAAATGCTG	AGATATCATT	GAAACGTCGG	GAACTCTATGA	CAGGTGCTAC
<i>Optimized piggyBac orf</i>	451	ACcAAcGCcG	AaATcagccT	GAAACGTCGc	GAAagcATGA	CcGGcGCgAC
<i>Natural piggyBac orf</i>	501	ATTTTCGTGAC	ACGAATGAAG	ATGAAATCTA	TGCTTTCTTT	GGTATTCTGG
<i>Optimized piggyBac orf</i>	501	cTTcCGcGA t	ACcAAcGAaG	ATGAaATCTA	cGCcTTCTTc	GGTATcCTGG
<i>Natural piggyBac orf</i>	551	TAATGACAGC	AGTGAGAAAA	GATAACCACA	TGTCCACAGA	TGACCTCTTT
<i>Optimized piggyBac orf</i>	551	TgATGACcGC	gGTGcG tAAA	GATAACCACA	TGagCACcGA	TGA tCTgTTT
<i>Natural piggyBac orf</i>	601	GATCGATCTT	TGTCAATGGT	GTACGTCTCT	GTAATGAGTC	GTGATCGTTT
<i>Optimized piggyBac orf</i>	601	GATCG t agcc	TGagcATGGT	tTACGT t agc	GT tATGAGcC	GtGAcCGTTT
<i>Natural piggyBac orf</i>	651	TGATTTTTTG	ATACGATGTC	TTAGAATGGA	TGACAAAAGT	ATACGGCCCA
<i>Optimized piggyBac orf</i>	651	cGATTT t cTG	ATcCG tTGTC	TgcG tATGGA	TGA tAAAAAGc	ATcCGcCCgA
<i>Natural piggyBac orf</i>	701	CAC TTCGAGA	AAACGATGTA	TTTACTCCTG	TTAGAAAAAT	ATGGGATCTC
<i>Optimized piggyBac orf</i>	701	CcCTgCGcGA	AAACGATGTg	TTcACcCCgG	TTcGcAAAAAT	cTGGGATCTg

FIG. 23 cont.

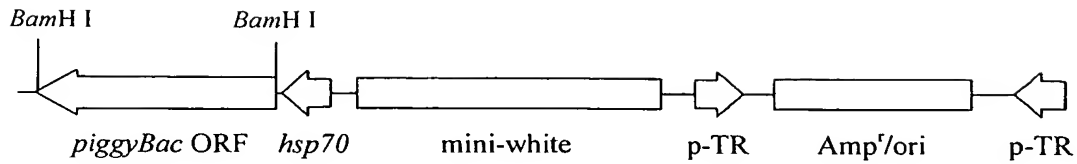
<i>Natural piggyBac orf</i>	751	TTTATCCATC	AGTGCATACA	AAATTACACT	CCAGGGGCTC	ATTTGACCAT
<i>Optimized piggyBac orf</i>	751	TTcATCCA cC	AGTGCATcCA	gAAcTACAc c	CCgGGcGCgC	AccTGACCAT
<i>Natural piggyBac orf</i>	801	AGATGAACAG	TTACTTGGTT	TTAGAGGACG	GTGTCCGTTT	AGGATGTATA
<i>Optimized piggyBac orf</i>	801	cGATGAACAG	cTgCTgGGTT	TTcGtGGtCG	cTGTCCGTTT	cGtATGTAcA
<i>Natural piggyBac orf</i>	851	TCCCAAACAA	GCCAAGTAAG	TATGGAATAA	AAATCCTCAT	GATGTGTGAC
<i>Optimized piggyBac orf</i>	851	TCCCgAACAA	aCCgAGcAAa	TAcGGtATcA	AAATCCTgAT	GATGTGTGAc
<i>Natural piggyBac orf</i>	901	AGTGGTACGA	AGTATATGAT	AAATGGAATG	CCTTATTTGG	GAAGAGGAAC
<i>Optimized piggyBac orf</i>	901	AGcGGTACcA	AgTAcATGAT	cAAcGGtATG	CCgTATcTGG	Gt cGtGGtAC
<i>Natural piggyBac orf</i>	951	ACAGACCAAC	GGAGTACCAC	TCGGTGAATA	CTACGTGAAG	GAGTTA TCAA
<i>Optimized piggyBac orf</i>	951	cCAGACCAAC	GGtGTgCCgC	TgGGTGAATA	CTACGTGAaA	GAacTgagcA
<i>Natural piggyBac orf</i>	1001	AGCCTGTGCA	CGGTAGTTGT	CGTAATATTA	CGTGTGACAA	TTGGTTTCACC
<i>Optimized piggyBac orf</i>	1001	AaCCgGTGCA	CGGTAGcTGT	CGTAAcATcA	CcTGTGAcAA	cTGGTTTCACC
<i>Natural piggyBac orf</i>	1051	TCAATCCGTT	TGGCAAAAAA	CTTACTACAA	GAACCGTATA	AGTTAACCAT
<i>Optimized piggyBac orf</i>	1051	agcATCCCgc	TGGCgAAAAA	CcTgCTgCAG	GAACCGTATA	AacTgACCAT
<i>Natural piggyBac orf</i>	1101	TGTGGGAACC	GTGCGATCAA	ACAAACGCGA	GATACCGGAA	GTA CTGAAAA
<i>Optimized piggyBac orf</i>	1101	cGTGGGtACC	GTtCGt agcA	ACAAACGtGA	aaTcCCGGAA	GTgCTGAAAA
<i>Natural piggyBac orf</i>	1151	ACAGTCGCTC	CAGGCCAGTG	GGAACATCGA	TGTTTTGTTT	TGACGGACCC
<i>Optimized piggyBac orf</i>	1151	ACAGcCGt ag	CcGtCCgGTG	GGcACcagcA	TGTTcTGTTT	cGAtGGtCCg
<i>Natural piggyBac orf</i>	1201	CTTACTCTCG	TCTCATATAA	ACCGAAGCCA	GCTAAGATGG	TATACTTATT
<i>Optimized piggyBac orf</i>	1201	CTgACcCTgG	Tt agcTAcAA	ACCGAAaCCG	GCgAAaATGG	TgTACcTgeT
<i>Natural piggyBac orf</i>	1251	ATCATCTTGT	GATGAGGATG	CTTCTATCAA	CGAAAGTACC	GGTAAACCGC
<i>Optimized piggyBac orf</i>	1251	gagcagcTGc	GAcGAaGAcG	CgagcATCAA	CGAAAGcACC	GGTAAACCGC
<i>Natural piggyBac orf</i>	1301	AAATGGTTAT	GTATTA TAAT	CAAAGTAAAG	GCGGAGTGGA	CACGC TAGAC
<i>Optimized piggyBac orf</i>	1301	AgATGGTTAT	GTAcTAcAAc	CAGAcAAAAG	GCGGtGTGGA	cACcCTgGA t
<i>Natural piggyBac orf</i>	1351	CAAAATGTGTT	CTGTGATGAC	CTGCAGTAGG	AAGACGAA TA	GGTGGCCTAT
<i>Optimized piggyBac orf</i>	1351	CAGATGTGca	gcGTtATGAC	CTGCAGccGc	AAaACcAAcc	GcTGGCCgAT
<i>Natural piggyBac orf</i>	1401	GGCATTATTG	TACGGAATGA	TAAACATTGC	CTGCATAAAT	TCTTTTATTA
<i>Optimized piggyBac orf</i>	1401	GGCgcTgcTG	TACGGtATGA	TcAACATcGC	CTGCATcAAc	agcTTTATcA
<i>Natural piggyBac orf</i>	1451	TA TACAGCCA	TAA TGTCAGT	AGCAAGGGAG	AAAAGGTTCA	AAGTCGCAAA
<i>Optimized piggyBac orf</i>	1451	Tc TACAGCCA	TAAcGTtAGc	AGCAaAGGtG	AAAAaGTTCA	gAGcCGCAAA

FIG. 23 (cont.)

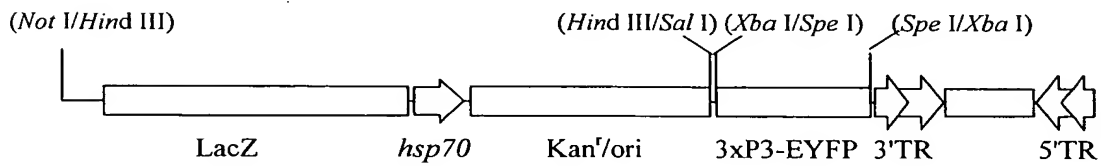
<i>Natural piggyBac orf</i>	1501	AAATTTATGA	GAAACCTTTA	CATGAGCCTG	ACGTCATCGT	TTATGCGTAA
<i>Optimized piggyBac orf</i>	1501	AAATTTATGc	GtAACCTgTA	CATGAGCCTG	ACcagcagcT	TcATGCGTAA
<i>Natural piggyBac orf</i>	1551	GCGTTTAGAA	GCTCCTACTT	TGAAGAGATA	TTTGCGCGAT	AATATCTCTA
<i>Optimized piggyBac orf</i>	1551	aCGTcTgGAA	GCcCCgACcc	TGAAacGtTA	TcTGCGCGAT	AAcATCagcA
<i>Natural piggyBac orf</i>	1601	ATATTTTGCC	AAATGAAGTG	CCTGGTACAT	CAGATGACAG	TACTGAAGAG
<i>Optimized piggyBac orf</i>	1601	AcATccTGCC	gAAcGAAGTG	CCgGGTACca	gcGATGAtAG	cACcGAAGaa
<i>Natural piggyBac orf</i>	1651	CCAGTAATGA	AAAAACGTAC	TTACTGTACT	TACTGCCCT	CTAAAAATAAG
<i>Optimized piggyBac orf</i>	1651	CCgGTgATGA	AAAAACGTAC	cTACTGTACc	TACTGCCCGa	gcAAAAATccG
<i>Natural piggyBac orf</i>	1701	GCGAAAGGCA	AATGCATCGT	GCAAAAAATG	CAAAAAAGTT	ATTTGTGCGAG
<i>Optimized piggyBac orf</i>	1701	cCGtAAaGCg	AAcGCgagcT	GCAAAAAATG	CAAAAAAGTT	ATcTGTCGtG
<i>Natural piggyBac orf</i>	1751	AGCATAATAT	TGATATGTGC	CAAAGTTGTT	TCTGA (SEQ ID NO: 69)	
<i>Optimized piggyBac orf</i>	1751	AaCATAAcAT	cGATATGTGC	CagAGcTGTT	TCTGA (SEQ ID NO: 70)	

FIG. 24

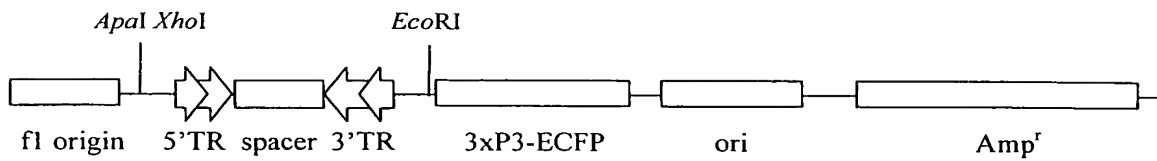
A. pCaSpeR-hs-orf



B. p(PZ)-Bac-EYFP



C. pBSII-ITR1.1k-ECFP



D. pXL-BacII-ECFP

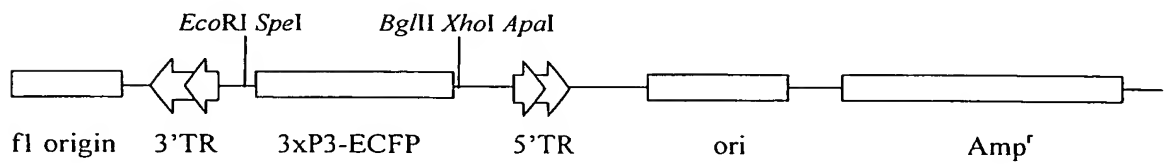


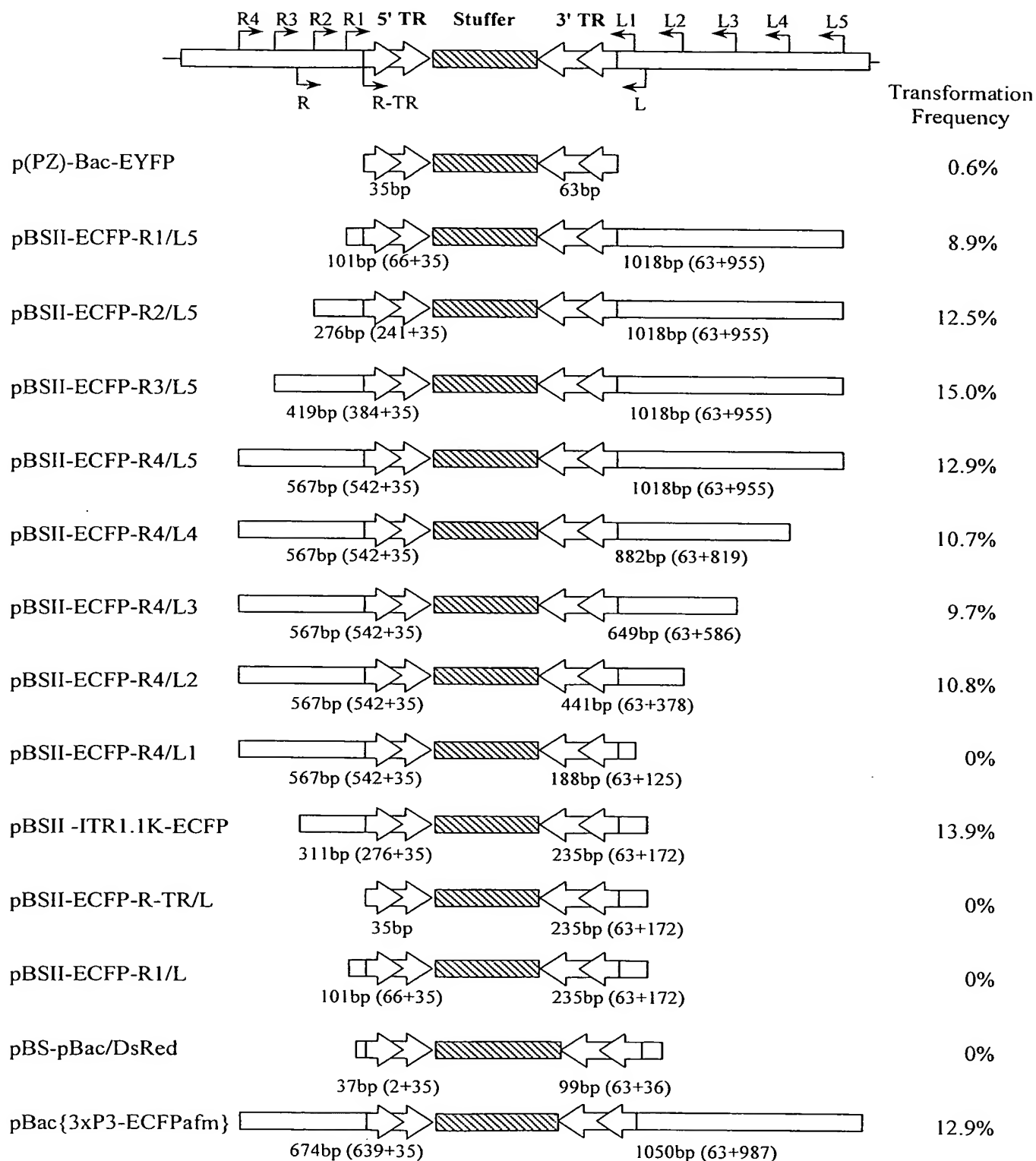
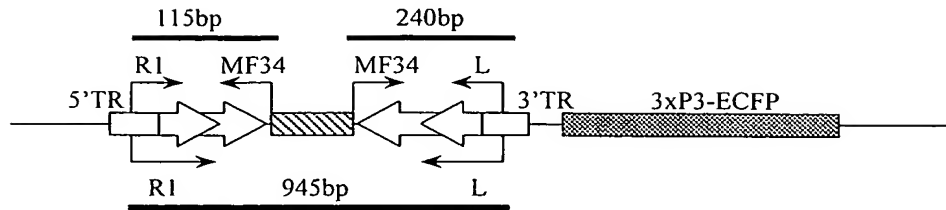
FIG. 25

FIG. 26

A



B

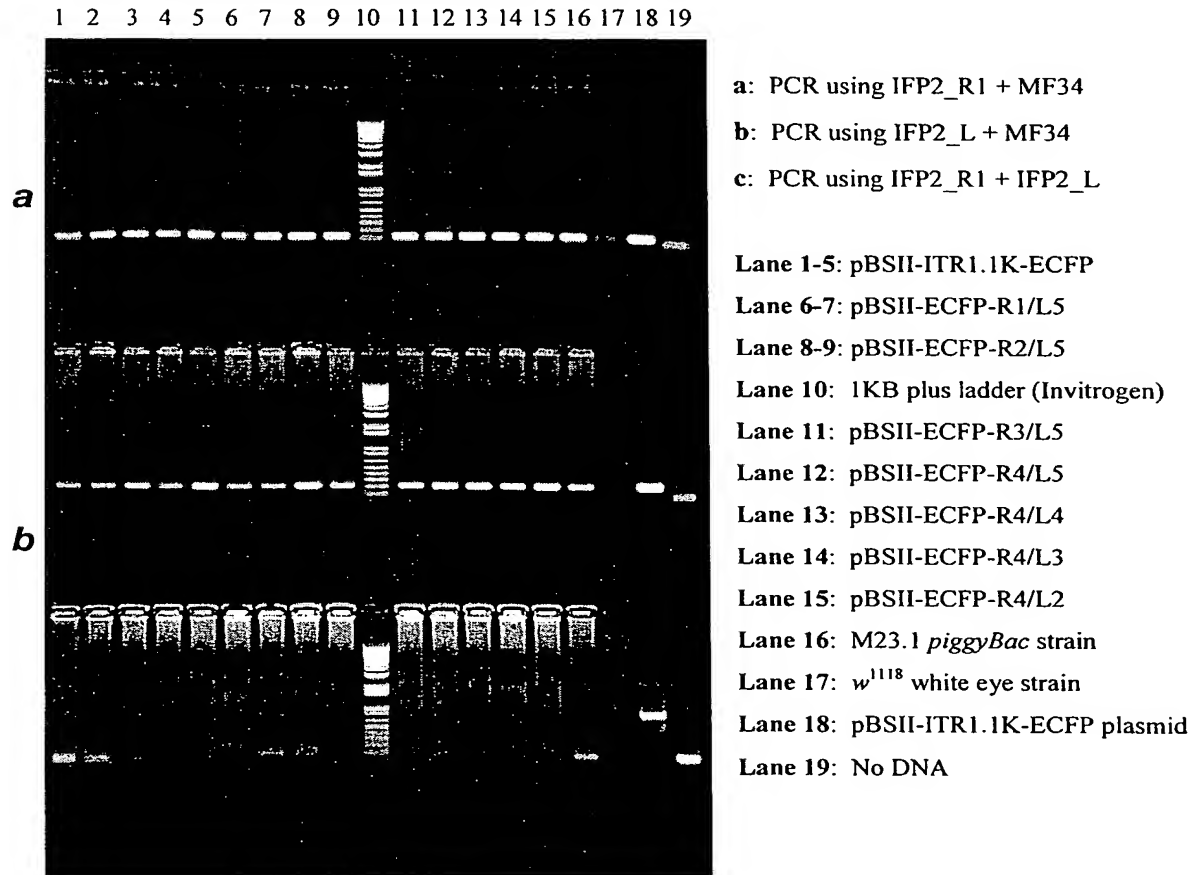
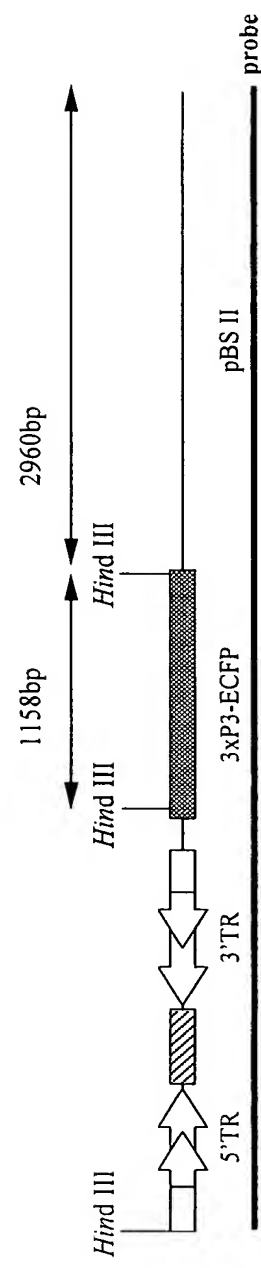
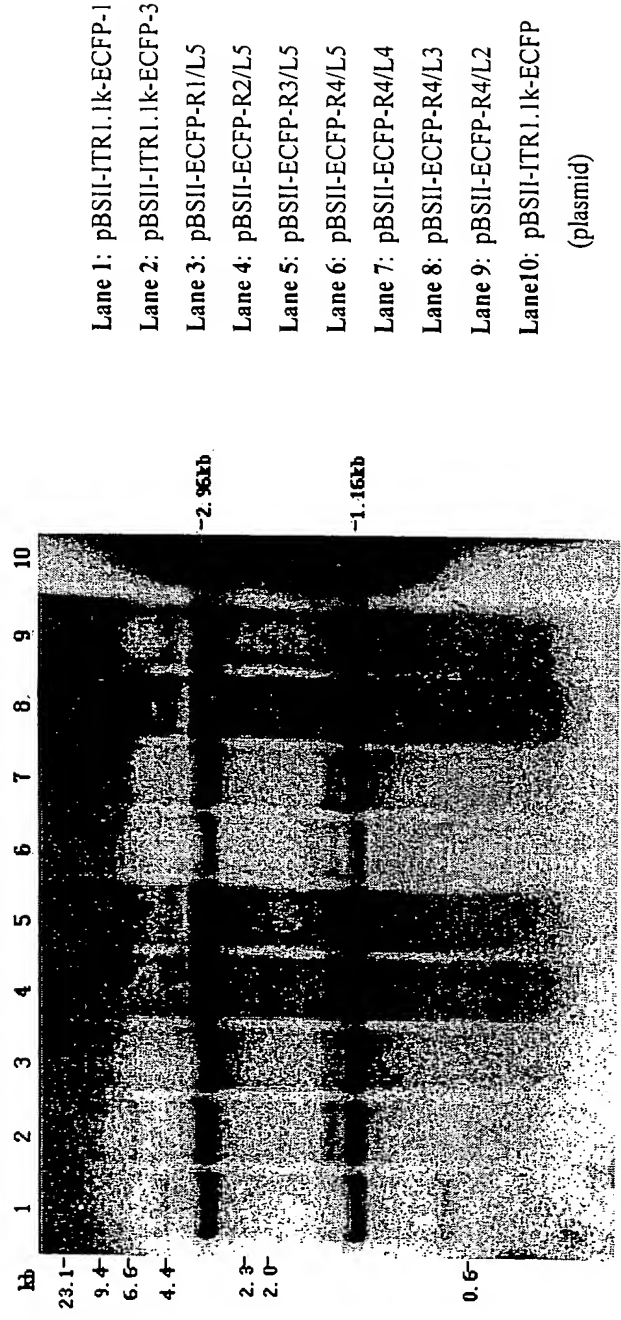


FIG. 27 **Southern Hybridization of the transformed strains**

A.



B.



- Lane 1: pBSII-ITR1.1k-ECFP-1
- Lane 2: pBSII-ITR1.1k-ECFP-3
- Lane 3: pBSII-ECFP-R1/L5
- Lane 4: pBSII-ECFP-R2/L5
- Lane 5: pBSII-ECFP-R3/L5
- Lane 6: pBSII-ECFP-R4/L5
- Lane 7: pBSII-ECFP-R4/L4
- Lane 8: pBSII-ECFP-R4/L3
- Lane 9: pBSII-ECFP-R4/L2
- Lane 10: pBSII-ITR1.1k-ECFP (plasmid)

FIG. 28

